

COGNITIVE AND SOCIAL CORRELATES OF SAVING BEHAVIOR
IN EARLY CHILDHOOD AND ADULTHOOD

EGE KAMBER

BOĞAZİÇİ UNIVERSITY

2021

COGNITIVE AND SOCIAL CORRELATES OF SAVING BEHAVIOR
IN EARLY CHILDHOOD AND ADULTHOOD

Thesis submitted to the
Institute for Graduate Studies in Social Sciences
in partial fulfillment of the requirements for the degree of

Master of Arts
in
Psychology

by
Ege Kamber

Boğaziçi University

2021

DECLARATION OF ORIGINALITY

I, Ege Kamber, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;
- this thesis contains no material that has been submitted or accepted for a degree or diploma in any other educational institution;
- this is a true copy of the thesis approved by my advisor and thesis committee at Boğaziçi University, including final revisions required by them.

Signature

Date

ABSTRACT

Cognitive and Social Correlates of Saving Behavior in Early Childhood and Adulthood

Savings play a crucial role in keeping the balance between income and expenses. However, individuals struggle to save and mostly end up with less savings than they have expected. Long-standing research on adults' savings revealed that several psychological factors support their saving behavior. Yet less is known about children's savings. Study 1 attempted to explore the development of saving behavior and psychological factors supporting preschool children's savings. Study 2 tested the exact relations with college students and non-student adults in a community sample. In Study 1, 72 preschool children participated in a series of behavioral tasks, and their parents completed questionnaires about their child. In Study 2, 113 college students and 192 non-student adults participated in a survey study. Study 1 showed that preschool children's saving behavior was associated with age, episodic foresight, executive function, and planning. Episodic foresight predicted an increase in children's savings. Planning predicted the actualization of saving intention and executive function predicted an adaptive engagement in saving behavior. In Study 2, students reported higher perceived saving behavior than non-student adults. In both samples, future orientation, budgeting, and childhood saving behavior were revealed as predictors of adults' perceived saving behavior. Inconsistent findings across studies and future implications were discussed.

ÖZET

Erken Çocukluk ve Yetişkinlikte Tutumluluk Davranışının

Bilişsel Beceri ve Sosyal Faktörler ile İlişkisi

Birikim yapmak, gelir ve gideri dengede tutmada önemli rol oynasa da insanların tutumlu davranmakta zorlandıkları ve beklediklerinden daha az birikim yapabildikleri bilinmektedir. Alanyazında yetişkinlerin tutumluluklarını destekleyen faktörler yıllardır çalışılmaktadır. Ancak, çocukların tutumluluğuna dair az sayıda çalışma vardır. Bu araştırmada, çocukların ve yetişkinlerin tutumluluk davranışlarının gelişiminin incelenmesi ve bu davranış ile ilişkili psikolojik faktörlerinin araştırılması amaçlanmıştır. Birinci çalışmaya okul öncesi dönemdeki 72 çocuk; ikinci çalışmaya ise 113 üniversite öğrencisi ve öğrenci olmayan 192 yetişkin katılmıştır. Birinci çalışmada çocuklar bir dizi davranışsal göreve, ebeveynleri ise anket çalışmasına katılmıştır. İkinci çalışmada yetişkinler bir anket çalışmasına katılmıştır. Sonuçlar incelendiğinde çocukların tutumluluğu yaş, epizodik öngörü, yönetici işlevler ve planlama ilişkilidir. Epizodik öngörü çocukların yaptıkları birikimdeki artışı yordamaktadır. Planlama tutumluluk amacını gerçekleştirmeyi; yönetici işlevler ise en optimal birikimi yapmayı yordamaktadır. İkinci çalışmada, öğrenciler, öğrenci olmayan yetişkinlere göre daha çok tutumlu davrandıklarını belirtmiştir. İki grupta da gelecek odaklılık, bütçe yapma ve çocukluk çağındaki tutumluluk davranışı yetişkinlerin algılanmış tutumluluk davranışlarını yordamaktadır. Çalışmalar arasında farklılaşan ilişkililer ve çalışmanın çıkarımları tartışılmıştır.

ACKNOWLEDGMENTS

I am extremely grateful to my advisor, Dr. Deniz Tahiroğlu for her excellent guidance, continuous feedback, and unfailing faith in this project since the beginning. I also would like to express my appreciation to my committee members, Dr. Gaye Soley and Dr. Aslı Aktan Erciyes, for their advice and contributions to this thesis.

I thank members of the Family and Child Studies Laboratory for their critical feedback and their time and dedication during the data collection and coding process. Also, I am grateful to all my friends for all their support throughout this process. I thank Didar Karadağ, Hamit Başgöl, and my labmate Hatice Şeyma Kara for their friendship and patience in listening to my complaints during my most stressful times. Thanks also go to my housemate, Uğur Çamkeser, for his endless tolerance for low internet connection during my online meetings with children. I would like to thank my soulmate and best friend Tuğçe Kırmacı for her support whenever I suspect my capabilities.

I am extremely fortunate to have so many privileges to pursue graduate studies. Thereby, I would like to thank my parents for supporting me to succeed in my academic interest, and my big brother Umut for role modeling me and letting me be a spoiled kid from time to time.

Finally, I thank all the participants for their interest in the study, especially children for spending their daily screen time with me.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 Research on saving.....	3
1.2 Paradigms to measure saving	14
CHAPTER 2: STUDY 1	18
2.1 Objectives.....	20
2.2 Method	23
2.3 Results.....	39
2.4 Discussion	50
CHAPTER 3: STUDY 2	56
3.1 Objectives.....	57
3.2 Method	58
3.3 Results.....	64
3.4 Discussion	73
CHAPTER 4: GENERAL DISCUSSION	78
APPENDIX A: ETHICS COMMITTEE APPROVAL	85
APPENDIX B: SAVING GAME	86
APPENDIX C: SAVING QUESTIONNAIRE.....	87
APPENDIX D: SAVING QUESTIONNAIRE (ORIGINAL TURKISH VERSION)	96
REFERENCES.....	104

LIST OF TABLES

Table 1. Demographics of the Child Sample	24
Table 2. Children's Saving Status	41
Table 3. Descriptive Statistics of the Variables in Study 1.....	42
Table 4. Pearson Correlation Tests Between Saving Behavior and Cognitive Capacities in Study 1.....	44
Table 5. Pearson Correlation Tests Between Saving Behavior, Personality, and Temperament in Study 1	47
Table 6. Pearson Correlation Tests Between Saving Behavior and Childhood Economic Socialization in Study 1	48
Table 7. Predictors of Saving Behavior in Children	49
Table 8. Demographics of the Community and Student Samples	60
Table 9. Descriptive Statistics of the Variables in Study 2.....	65
Table 10. Pearson Correlation Tests Between Saving Behavior, Future Orientation, Personality, Budgeting, and Self-Control in the Community Sample	67
Table 11. Pearson Correlation Tests Between Saving Behavior, Future Orientation, Personality, Budgeting, and Self-Control in the Student Sample	68
Table 12. Pearson Correlation Tests Between Saving Behavior and Childhood Economic Socialization in the Community Sample.....	69
Table 13. Pearson Correlation Tests Between Saving Behavior and Childhood Economic Socialization in the Student Sample	70
Table 14. Predictors of Saving Behavior in Adulthood	73

CHAPTER 1

INTRODUCTION

Children, as well as adults, frequently struggle to meet their expenditures with available resources. For instance, children's one-week allowance might not be enough to compensate for both their weekly expenses and an additional school trip that week. Saving is one solution to overcome these financial problems, which is defined as the "deferment of consumption to the future" (Wärneryd, 1999, p. 159). Adults may accumulate money in the saving accounts for future expenses (e.g., vacation), and children may save from their allowances for the upcoming trip. In the act of saving, individuals postpone current consumptions and spare some of the resources for later use (Canova, Rattazzi, & Webley, 2005). These postponements function as a way of securing the existing resources, or as a means to accumulate growing reserves allowing for more expensive future expenditures (Katona, 1975).

Saving behavior has been studied with adults in the economic literature for decades. Yet, these studies referred to saving solely as a financial variable that is equal to the amount of money left after necessities (e.g., Keynes, 1936; Modigliani & Brumberg, 1954). Although this approach is a meaningful tool to estimate the savings rates of populations from an economic perspective, there is variability at the individual level; people with similar socio-economic backgrounds greatly differ from each other in accumulating savings (e.g., Thaler & Shefrin, 1981). Economic psychological approaches specifically examine this individual variability and discuss saving behavior as a result of a deliberate decision-making process influenced by economic (e.g., income) and psychological factors (e.g., personality; Furnham & Argyle, 1998; Katona, 1975; Thaler & Shefrin, 1981; Wärneryd, 1999).

In one of the earliest psychological approaches, Katona (1975) defines three types of savings. Contractual savings is the result of a single saving decision made in the past, and the obligations of the decision pursue a while. Bank credits or pension schemes are examples of contractual savings. In discretionary savings, individuals deliberately put aside a portion of their income to create additional funds use it in the future without any external pressure from prior premises. Saving in bank accounts or money boxes are examples of discretionary savings. Lastly, residual savings (or accidental saving) simply refers to the amount that could not be spent. This kind of savings, differently from the others, includes no intention at all.

Katona (1975) argued that individuals' engagement in the saving types described above was influenced by their willingness (e.g., expectations and motives), material availability, and abilities. Optimistic expectations about the future economic condition may increase the preference for contractual savings whereas, uncertainty about future economic conditions may boost discretionary savings to be prepared for the rainy days (Katona, 1975; Webley & Nyhus, 2001). On the other hand, changes in income (e.g., material availability) may decrease or increase leftover disposable income after necessities (Katona, 1949). Lastly, two cognitive abilities, namely foresight and self-control, might be influential in saving as well since they enable people to envision their future consumption or waive immediate gratifications (Katona, 1975).

Although earlier research focused on adults' savings, saving behavior is also a prevalent behavior in childhood (Sonuga-Barke & Webley, 1993). Children accumulate money in their piggy banks or save fancy papers for upcoming activities. A small body of literature investigates such economic behaviors of children. These studies demonstrate that even 3-year-old children are able to engage in saving

(Metcalf & Atance, 2011), and there is an increase in school-aged children's saving behavior such that 12-year-old children save more than 6-year-old children (Otto, Schots, Westerman, & Webley, 2006). However, there are mixed findings on the age-related increase in preschoolers' savings. Some studies revealed an improvement between ages 3 and 5 (e.g., Atance, Metcalf, & Thiessen, 2017), while others failed to find such an improvement during preschool years (e.g., Kamawar, Connolly, Astle-Rahim, Smygwaty, & Vendetti, 2019).

In this study, I aimed to examine the saving behavior of both preschool children and adults and investigate the development and correlates of saving behavior. In this chapter, the literature on saving and fundamental paradigms assessing children's savings were discussed.

1.1 Research on saving

The seminal work of Katona (1975) drew attention to the psychological roots of saving behavior. Since then, an increasing number of studies have examined the correlates of saving behavior (e.g., Shefrin & Thaler, 1988). In this section, the roles of cognitive abilities (i.e., future thinking, executive function, and self-control), non-cognitive characteristics (i.e., temperament, and personality), and social factors (i.e., childhood economic socialization) in preschoolers' and adults' saving behavior were discussed.

1.1.1 Saving and future thinking

Individuals spend a great deal of time thinking about the future. More than half of our daily thoughts are future-oriented (Branch & Zickar, 2021; D'Armentau, Renaud, & Van der Linden, 2011). Individuals' ability to think about the future (i.e.,

future-oriented cognition) starts to emerge at the age of 3 and undergoes a drastic development throughout the preschool years (Bélanger, Atance, Varghese, Nguyen, & Vendetti, 2014). Research indicate that the ability to anticipate the future supports the development and functioning of many cognitive skills such as delay of gratification, episodic foresight, and prospective memory (Atance, 2008; Atance & O'Neill, 2001; Mazachwosky & Mahy, 2020). For instance, a level of future thinking enables children to waive currently available gratification for the sake of future-self (Atance, 2008).

Episodic foresight, defined as the ability to mentally envision the self in the future, is especially important in the development of saving behavior (Atance & O'Neill, 2001; Metcalf & Atance, 2011). Without an ability to envision future-self, individuals would have no reason to save for (Metcalf & Atance, 2011).

Correlational studies supported that children's savings were related to their performance in episodic foresight tasks (Mazachowsky & Mahy, 2020). Moreover, when 3- to 5-year-old children were given a chance to play the lab-based saving task again for a second time, children saved more in the second trial compared to their earlier attempts, suggesting that the recent episodic experience may have facilitated their forecasting, which may have resulted in higher amounts of savings (Metcalf & Atance, 2011).

The relation between future thinking and saving is also observed in adulthood (Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009; Webley & Nyhus, 2013). Although all healthy individuals are capable of thinking of their future self, there are individual differences in their orientation to the future (Ersner-Hershfield, 2011; Strathman, Gleicher, Boninger, & Edwards, 1994). The future self-continuity hypothesis argues that individuals differ from each other based on how

close they feel about their future selves; some people may feel closer to their future selves, whereas others may treat them as if someone else (Ersner-Hershfield et al., 2009). This individual variability explained the variance in saving behavior; individuals who felt more connected to their future selves saved more as they considered their future selves' needs more (Ersner-Hershfield et al., 2009; Ersner-Hershfield, Wimmer, & Knutson, 2009). Individuals also differ from one another based on their considerations of future consequences of their current actions (Joireman, Shaffer, Balliet, & Strathman, 2012; Strathman et al., 1994). In several studies, it was found that individuals who favor future outcomes more (against immediate outcomes) were more likely to build up more savings than the others (Lea, Webley, & Walker, 1995; Webley & Nyhus, 2001, 2006).

These findings suggest that there is a link between future thinking and savings. Episodic foresight may play a role in the development of saving, and adults' orientation to the future might explain the variance in adults' savings (Ersner-Hershfield et al., 2009; Meltcalf & Atance, 2011; Webley & Nyhus, 2013).

1.1.2 Saving and executive function

Executive function is defined as “the deliberate, top-down neurocognitive processes involved in the conscious, goal-directed control of thought, action, and emotion” (Zelazo & Carlson, 2012, p. 354). The development of executive function starts during infancy and continues until early adulthood (Hongwanishkul, Happaney, Lee, & Zelazo, 2005; Zelazo et al., 2014).

Executive function is conceptualized as a hierarchical structure that core skills, namely shifting, inhibitory control, and working memory, take place in the functioning of higher-order skills (e.g., planning; Carlson, Moses, & Claxton, 2004;

Diamond, 2013). In the core skills, shifting (or sometimes referred to as cognitive flexibility) is responsible for regulating attention between tasks, inhibitory control refers to the deliberate control over dominant responses and lastly, working memory is the capacity to update and monitor relevant information (Miyake et al., 2000).

Suddendorf and Corballis (2007) put forward that working memory and inhibition are required to think about the future. While working memory provides an opportunity to manipulate the existing information in the mind (e.g., scene details) to construct possible future scenes, inhibitory control suppresses current dominant states (e.g., being hungry) to anticipate future states (e.g., being full after eating; Suddendorf & Corballis, 2007). As saving requires a future-thinking process and suppression of dominant responses (e.g., spending for now), working memory and inhibitory control might also be needed to engage in saving (Atance et al., 2017; Friedline, 2015; Metcalf & Atance, 2011).

Atance et al. (2017) explored these relations and administered a lab-based saving task (i.e., marble game) and a battery of executive function tasks assessing inhibitory control and working memory to 3- to 5-year-old children. The results revealed that children's savings were not related to their inhibitory control or working memory (Atance et al., 2017). Although the findings were theoretically surprising, other studies also revealed mixed findings. Some found that children's working memory skills predicted their performance in future-thinking tasks (Ferretti et al., 2018; Ünal & Hohenberger, 2017), while others found no such associations (e.g., Hanson, Atance, & Paluck, 2014).

Lee and Carlson (2015) proposed a different role of executive function in saving. Maturation in executive function is linked with a better assessment of the environment and regulation of attention control (e.g., Diamond, 2013). Therefore, as

executive function develops, children could be more competent in their saving decision, which enables them to shift between decisions (saving to spending or vice versa), whichever promises more benefit (Lee & Carlson, 2015). To test this hypothesis, in their study, children participated in a game in which they could either spend their reserve on a currently available but less desirable toy or save it for a more desirable toy that would be available later. In the game, there was manipulation for the *savers* (i.e., children who have saved for the more desirable toy). For these children, a broken version of the more desirable toy was given. When savers received the more desirable toy, they realized that it was broken, so they could not get to play with it even though they had saved for it. After this manipulation, children were given a second chance to play the game from the beginning. It was expected that the savers would now switch their decisions and spend their reserves on less desirable toys because they would know that the more desirable toy was broken and there was no need to save for it. The results were interesting that even after children found out that the more desirable toy was broken, some children still saved for it regardless, but others switched their decisions from saving to spending. This individual difference was predicted by their executive functioning; children who switched their saving decision (to spending) had higher executive function scores in a standardized executive function scale compared to the others who did not switch (Lee & Carlson, 2015). The results indicated that executive function may not predict higher amounts of savings per se, but it might be associated with a more adaptive saving decision-making process (Lee & Carlson, 2015).

Besides core skills, high-order executive function skills are also linked with saving behavior. One of those high-order skills, planning is defined as the ability to evaluate the environment, formulate plans, and execute the actions in order

(Diamond, 2013; Hill, 2004). It might be particularly crucial in saving because individuals perform series of actions (i.e., save or spend) until the saving goal is reached. Therefore, careful budgeting might be required so as not to save less than needed (Thaler & Shefrin, 1981). Studies with adults showed that planning practices (e.g., expenditure plans) increased the likelihood of actualizing saving intentions (Rabinovich & Webley, 2007). In childhood, Kamawar et al. (2019) assigned preschool children to either baseline or budgeting (experimental) conditions. In the budgeting condition, children were provided with an option to budget their expenditures before the saving game, whereas in the control condition such a budget option was not provided. The results revealed that children in the budgeting condition saved more than the children in the control condition. Further, only for those children, a positive correlation between saving and planning was observed, which may suggest that children might not plan simultaneously, but when they are encouraged/prompted to do so, children with better planning skills may benefit from budgeting and save more (Kamawar et al., 2019).

Overall, these findings suggest that maturation in executive function may support children's engagement in saving more flexibly, and shift across decisions whenever necessary (Lee & Carlson, 2015). Planning may exclusively support a more successful saving process and realization of saving intentions (Rabinovich & Webley, 2007).

1.1.3 Saving and self-control

The construct of self-control has been examined in the psychology literature for a long time under many different labels such as executive function, willpower or conscientiousness (Duckworth & Kern, 2011; Moffitt et al., 2011). Each concept has

a different operational definition, which creates a challenge to define what self-control is. Yet, the common point of all these is that self-control involves the voluntary control over impulsive responses (e.g., thoughts, feelings, or actions) for more valued goals (Diamond, 2013; Duckworth, Taxer, Eskreis-Winkler, Galla, & Gross, 2019).

Duckworth and Kern (2011) identified four different measurement traditions in the self-control literature: a) executive function tasks, b) delay of gratification tasks, c) self-report questionnaires, and d) informant-report questionnaires. Although the tools overlap with each other in terms of assessing voluntary control over tempting responses, a meta-analysis revealed considerable heterogeneity across measures, which may suggest that these tools may capture different facets of self-control (Duckworth & Kern, 2011).

Self-control is required in saving as people need to defer currently available gratification to save for the future (Ainslie, 1975; Rabinovich & Webley, 2007; Thaler & Shefrin, 1981; Wärneryd, 1999). Studies on adults' savings repeatedly showed that self-control capacity assessed with self-report questionnaires was associated with their saving performances (Rha, Montalto, & Hanna, 2006; Strömbäck, Lind, Skagerlund, Västfjäll, & Tinghög, 2017). On the contrary, studies with children revealed no meaningful associations between these capacities (Kamawar et al., 2019; Lee & Carlson, 2015). One explanation for these null findings might be methodological. In child studies, self-control was assessed with the delay of gratification tasks. Delay of gratification is defined as the skill of withholding currently available gratification for later but more valuable outcomes (Mischel, Shoda, & Rodriguez 1989). Two types of delay of gratification tasks are commonly used in the literature: Choice and sustained-delay paradigms. In the

choice delay paradigms, children are asked to make series of decisions whether to choose less reward for now (e.g., one sticker) or more rewards for later (e.g., two stickers). Delay of gratification is measured as the number of later choices (e.g., three later decisions out of 5 questions). On the contrary, in the sustained-delay paradigm, children are asked to wait for a more desirable future reward if they prefer to have it (e.g., waiting 15 minutes to have two cookies or have one cookie now). Delay of gratification is assessed with the time that they could resist current gratification (Carlson et al., 2018; Duckworth & Kern, 2011; Lemmon & Moore, 2007; Mischel et al., 1989).

Almost all the studies in the saving literature administered the choice delay paradigm to assess children's self-control (e.g., Kamawar et al., 2019; Lee & Carlson, 2015). However, the required delay in saving might be captured better with the sustained delay task because during saving, children need to show a sustained resistance against currently available consumption opportunities until future consumption becomes available (Ainslie, 1975; Thaler & Shefrin, 1981). Therefore, other paradigms/methods (e.g., sustained delay tasks) assessing self-control or delay of gratification should be also administered in order to investigate the role of self-control in children's savings and understand the inconsistent findings across child and adult studies.

1.1.4 Saving, personality, and temperament

Besides cognitive skills, personality might also be linked with saving behavior (Brandstätter, 2005). Research on human personality identified five personality traits: Extraversion, agreeableness, neuroticism, conscientiousness, and openness to experience (McCrae & Costa, 2008). These traits refer to "an individual's

characteristic patterns of thought, emotion, and behavior, together with the psychological mechanisms – hidden or not – behind those patterns” (Funder, 2019, p.68).

These five traits are associated with saving behavior in different directions (e.g., Mowen, 2000). Conscientiousness, the propensity to be perseverant and goal-oriented, predicts higher levels of savings (Brandstätter, 2005; Hershey & Mowen, 2000; Kausel, Hansen, & Tapia, 2016; Letkiewicz & Fox, 2014). Neuroticism is associated with an unstable emotional state, which increases the likelihood of compulsive buying and predicts lower levels of savings (Canova & Manganelli Rattazzi, 2004; Donnelly, Iyer & Howell, 2012; Mowen & Spears, 1999; Nyhus & Webley, 2001). Lastly, extravert individuals prefer to spend time with others (e.g., social activities), which leads them to save less and spend more on currently available gratifications (Canova & Manganelli Rattazzi, 2004; Hirsh, Morisano, & Peterson, 2008; Nyhus & Webley, 2001).

Agreeableness and openness to experience traits are understudied in the literature. The existing studies also revealed mixed findings in general. Theoretically, agreeableness is expected to be negatively correlated with savings since agreeable individuals tend to be more generous (Nyhus & Webley, 2001). On the other hand, openness to experience consists of many facets such as originality, aesthetics, or intellectuality (John, Naumann, & Soto, 2008). Especially, the intellectuality facet might be associated with a more responsible financial behavior. Some studies found theoretically congruent correlations; agreeableness negatively and openness to experience positively were correlated with adults’ saving behavior in expected directions (e.g., Mayfield, Perdue, & Wooten, 2008; Nyhus & Webley, 2001). However, another group of studies showed reverse associations; for instance,

openness to experience was negative associated with adults' saving behavior (e.g., Asebedo et al., 2019; Troisi, Christopher, & Marek, 2006). Also, there are studies that failed to reveal any relation between these personality traits and saving behavior (e.g., Canova & Manganeli Rattazzi, 2004).

Besides these five traits, other traits might also explain the variance in savings. For example, grit is categorized under conscientiousness and refers to the “perseverance and passion for long-term goals” (Duckworth, Peterson, Matthews, & Kelly, 2007, p.1087). Higher perseverance is associated with better financial well-being in adults (Duckworth & Weir, 2011) and better performance in self-control-demanding tasks in children (Duckworth, Kirby, Tsukayama, Bernstein, & Ericsson, 2011). Therefore, grit might be a great candidate to explain individual differences in savings as well.

Personality traits involve complex patterns of thoughts and behavior. Therefore, researchers assume that human personality might be built upon biologically based individual differences in motor responses, attentional reactivity, or emotion regulation (Rothbart, 2007). These constitutionally based individual differences are called temperament and observed since infancy (Rothbart & Bates, 1998). Three broad temperament constructs, namely negative affectivity, surgency, and effortful control, are frequently identified (Putnam & Rothbart, 2006). Greater disposition to negative affectivity is associated with poor emotion regulation, and higher levels of fear, frustration, or discomfort. Higher levels of surgency are related to impulsive tendencies such as pleasure-seeking, and activity. Lastly, effortful control is associated with attention regulation and inhibitory control (Putnam & Rothbart, 2006). Especially effortful control might be associated with children's savings as it includes attention control and inhibition.

To my best knowledge, there is no study on the links between children's temperament, personality, and savings. These links are needed to be tested to understand the development and correlates of saving behavior.

1.1.5 Saving and childhood economic socialization

Saving is also a social act such that individuals' socialization with the economy influences their saving behavior (Friedline, 2015). Individuals first learn about the financial world and behaviors (e.g., saving) through parental teaching and modeling. Parents provide practice (e.g., shopping together) and education (e.g., receiving pocket money) to prepare their children for economic life (Furnham, 1999a; Shim, Barber, Card, Xiao, & Serido, 2010). This phase is called parental economic socialization (or family financial socialization; Furnham, 1999a; Gudmunson & Danes, 2011) and having a rich parental input during the earlier phase of life increases children's capabilities in the economy. For instance, children who regularly receive pocket money know more about the economy than their peers who do not receive regular pocket money (Lewis & Scott, 2000).

Research on adolescents and adults showed that economic socialization during childhood may also shape a general attitude toward saving (e.g., saving habits; Elliot, Webley, & Friedline, 2011). Adults who had been encouraged to save by their parents during their childhood make more secure financial decisions (e.g., choose to save rather than spend; Webley & Nyhus, 2013) and have better financial assets than others (Gudmunson & Danes, 2011; Kim & Chatterjee, 2013).

However, the samples of these studies are school-aged children and adolescents (e.g., Shim et al., 2010). There is no study on economic socialization during early childhood, which may be crucial in the development of saving since it

might be the first phase where children learn and explore economic decisions (e.g., having a piggy bank as a child to save money). Therefore, economic socialization should be examined with young children to understand how it influences the development of saving.

1.2 Paradigms to measure saving

In the literature, several measurement methods have been adopted to measure saving behavior. In adult studies, self-report measures are frequently administered, whereas behavioral methods are preferred the most in child studies.

Self-report measures involve many questions about individuals' actual savings (e.g., saving accounts and investments) and saving behavior (e.g., preference for saving; Katona, 1975). These measures have been repeatedly used in population-representative samples, and robustly revealed satisfactory psychometric properties (e.g., Consumer Sentiment Index; Katona, 1975). On the other hand, behavioral methods are recently developed and are mostly used to assess children's savings within relatively low sample sizes. Two behavioral tasks stand out as reliable assessment tools: the board game (Sonuga-Barke & Webley, 1993) and the marble game (Metcalf & Atance, 2011). Both tasks attempt to simulate an economic scenario in which children are provided with a reserve that is not enough to cover both current and future consumptions. Therefore, children need to save some of their reserves to carry out future consumption. In the following sections, these two behavioral methods are reviewed in detail.

1.2.1 Board game paradigm

The board game paradigm is traditionally used to measure school-aged children's savings. The paradigm involves a target toy which is selected by children at the beginning of the game and a child-centered economy which involves banks (to deposit tokens) and stores (to spend tokens). Children play the game with a limited number of tokens and the goal of the game is to save enough tokens to buy the preselected toy at the end of the game (Sonuga-Barke & Webley, 1993).

Mazachowsky and Mahy (2020) recently developed a simplified version of the board game suitable for preschool children that does not include complicated financial institutions (i.e., banks). In the task, the experimenter tells the child that they will take a tour of the town by visiting many locations on board and asks the child to choose a target toy. Later, the experimenter gives the reserve to children (i.e., four tokens) and tells them that they could spend them to buy small treats as they are touring the town or save at least three of them for the desired toy to purchase at the end. The child starts the tour according to the randomly ordered game cards that show where to go next. There are nine places in the game, four of which involve a purchasing opportunity in exchange for a token (e.g., the sticker shop sells one sticker for a token). The other five locations are filler-places (e.g., pool) in which there is no purchase opportunity. The dependent variable is the tokens saved at the end of the game.

The board game paradigm captured meaningful individual differences both in preschool and school-aged children. For instance, preschool children's savings performances on the board were correlated with their age, and cognitive skills such as episodic foresight (Mazachowsky & Mahy, 2020).

1.2.2 Marble game paradigm

The marble game does not involve a familiar economic environment (e.g., shops) or fiscal system (i.e., token economy) as the board game design. There are only two marble runs that differ in desirability (Metcalf & Atance, 2011). One of the runs, the big run, has longer tracks and fancy add-ons (e.g., mill) compared to the other one, small run, which makes the big run more desirable for the children (e.g., in one study, 87% of preschool children sample picked the big run as more desirable; Kamawar et al., 2019). In the game, children are given a certain number of marbles and are first asked to play at the small run for three minutes. Then, the big run becomes available. Children get to play at the big run if they have saved marbles. Thus, children need to secure some of the marbles while playing at the small one. The dependent variable is the number of marbles children save to use at the big marble run.

The marble game paradigm is extensively used to measure preschoolers' savings. However, these studies suffered from low saving rates (e.g., Atance et al., 2017; Kamawar et al., 2019; Lee & Carlson, 2015). Children mostly failed in the marble game in their first attempt, yet they increased their performances in their second attempt in the game (Metcalf & Atance 2011).

1.3 Conclusion

After decades of investigation, the findings suit and extend the earlier models (Katona, 1975; Otto, 2013). Cognitive capacities (i.e., future thinking, executive function, self-control), personality, and social factors (i.e., childhood economic socialization) might be important factors in the saving behavior (Lee & Carlson, 2015; Nyhus, 2002). However, the literature is still limited in a number of ways.

The adult literature on saving behavior can be traced back to the late 1940s (e.g., Katona, 1949). However, only recently the focus has shifted to children's savings. Therefore, more investigation on children's savings is needed to fill the gaps in the field (e.g., the role of temperament) and understand conflicting findings across life cycles (e.g., self-control is correlated with saving in adults, but not in children; Kamawar et al., 2019; Rabinovich & Webley, 2007).

Saving behavior may not be a unified construct, but rather there might be different aspects of saving behavior. Katona (1975) defined different savings based on the intention and when the decision has been made. In contractual and discretionary savings, people intentionally choose to save; whereas in the residual savings, people end up with left-over money that they could not be spent. Contractual savings, different than discretionary savings, are based on a single saving decision that has been made before (e.g., bank credit). However, discretionary savings often require multiple saving decisions that are taken consecutively to accumulate funding such as saving in money box (Katona, 1975; Nyhus, 2001; Otto, 2009). However, there is no study on exploring different saving types in childhood, which might be important to understand and compare the developments of saving types.

In this study, I attempted to identify and develop methods to assess different saving types in childhood. Also, another aim of the study was to examine the correlates of saving behavior in preschool children and adults to reach conclusions about both the development and correlates of saving.

CHAPTER 2

STUDY 1

Saving behavior supports the well-being of future self by ensuring that future needs will be compensated (e.g., Katona, 1975; Shefrin & Thaler, 1988). Chapter 1 discussed several cognitive capacities and non-cognitive factors associated with individuals' saving behavior and highlighted that most of these relations were examined with adults, but less is known about children's savings (Katona, 1975; Nyhus, 2018; Otto, 2009; Sonuga-Barke & Webley, 1993).

Recent studies on children's savings showed that even 3-year-old children can save, and individual differences in their savings were associated with several cognitive abilities (i.e., episodic foresight and executive function; Lee & Carlson, 2020; Mazachowsky & Mahy, 2020). However, the exact roles of these cognitive abilities are needed to be examined and other correlates of saving behavior (e.g., social factors and personality) should be explored to understand the development of saving behavior. The first goal of this study was to examine the development and correlates of preschoolers' savings.

Two behavioral paradigms (i.e., marble game paradigm [Metcalf & Atance, 2011] and saving board game [Mazachowsky & Mahy, 2020]) are widely used to measure preschool children's savings. Although both paradigms revealed meaningful individual differences (Atance et al., 2017; Mazachowsky & Mahy, 2020), children's savings rates differ across these tasks. In the marble game, a floor effect is frequently observed; in a study, 60% of 3- to 5-year-old children failed to save in this game (Metcalf & Atance, 2011). However, almost all three-year-old (90%) children engaged in saving at least once in the board game (Mazachowsky & Mahy, 2020).

In a preliminary study (Kamber & Tahiroğlu, 2019), we attempted to compare children's savings in these behavioral tasks and adapt a recently developed parental report questionnaire namely the Children's Future Thinking Questionnaire (Mazachowsky & Mahy, 2020) into Turkish to capture children's savings based on both behavioral tasks and parental reports. Also, to explore social factors of saving behavior, a questionnaire assessing childhood economic socialization (e.g., discussing financial matters, teaching saving, or recommending budgeting) was administered to the parents.

Forty-eight 3- to 5-years old children and their parents participated in the preliminary study. In the marble game, a floor effect was observed. The majority of children (70%) failed to save any marbles in the marble game, whereas 67% of children saved at least once in the board game. Contrary to the marble game, however, the board game captured an age-related increase; older children ($M = 2.09$, $SD = 1.53$) saved more than younger children ($M = .94$, $SD = 1.25$), $t(38) = 2.60$, $p = .01$. Moreover, children's savings in the tasks were not correlated with each other.

In the parent report future-thinking assessment, Children's Future Thinking Questionnaire showed high internal consistency ($\alpha = .83$). However, a few of the subscales including saving showed relatively poor internal consistencies (α s ranging from .41 - .81). The items highlighted by the parents as hard-to-comprehend were rephrased to be used in the thesis project.

In the childhood economic socialization questionnaire, there were twelve questions on a yes/no scale with open-ended sections to encourage parents to elaborate on their answers (e.g., "Do you buy saving promoting items to your child?" and "If yes, please explain"). Parents' ratings in the economic socialization questionnaire did not reveal much individual difference (e.g., almost all parents

bought saving-encouraging items). Yes/no structure of the questionnaire may have yielded this lack of variability. However, participants differed in one question; almost 60% of parents stated they stuck to their expenditure plans while shopping with their child (e.g., did not buy a candy bar even when the child insisted during shopping). The others stated that they changed their expenditure plans while shopping. Children whose parents stuck with their plans saved more in the board game ($M = 2.21$, $SD = 1.62$) than others whose parents changed their plans ($M = .83$, $SD = 1.01$), $t(35) = 3.01$, $p = .01$.

The preliminary study revealed that the board game paradigm is a more appropriate paradigm to assess these young children's savings (e.g., revealing individual variability) rather than the marble game which revealed a floor effect. Also, economic socialization might be an influential factor in the development of saving behavior in preschool children. In Study 1, I, using the board game paradigm, explored a different function of saving and examined correlates of saving behavior including parental economic socialization.

2.1 Objectives

At the beginning of chapter 1, two fundamental functions of saving were identified: (a) it serves to secure the current resource safely to be used in a future transaction and (b) creates a growing reserve by accumulating sums across time (Katona, 1975). Children, as well as adults, engage in saving to reach either of the outcomes. They may save the rest of the candy for eating after dinner (i.e., secure the reserve for the future) or accumulate money in piggy banks to create larger sums (i.e., creating reserves).

Although children engage in both types of saving, the latter (accumulating greater sums) is more frequently recognized as saving and encouraged by social factors. When Otto (2009) asked children, what saving is, the majority of them defined saving as a means to create greater reserves. Also, 83% of the parents in our preliminary study recognized this aspect of savings and encouraged saving with piggy banks, which are usually used to accumulate reserves from the flow of income (Kamber & Tahiroğlu, 2019).

This type of saving also resembles saving behavior operationalized in adult studies. The majority of adult studies measured discretionary type of saving (i.e., deliberately engaging multiple saving decisions in savings to build up funds) as representing adults' saving behavior (Katona, 1975; Nyhus & Webley, 2001; Shefrin & Thaler, 1988). In these studies, adults were asked to give information about their discretionary savings (e.g., savings in the bank accounts) or reflect how likely they save in these accounts (Nyhus, 2018). However, child studies did not attempt to capture how children build up savings but rather focused on how children secure their existing reserves for future use. To better able to compare children's and adults' saving behavior, this study attempted to assess children's saving behavior in the function of creating reserves.

For these reasons, a new version of the board game was developed to measure children's engagement in saving as a way to create greater reserves. Similar to the original board game protocol designed for preschool children (e.g., Mazachowsky & Mahy, 2020), children were introduced to a child-centered economic context with a limited number of tokens. Different from the original task, tokens were given at two allowance locations to manipulate if/how children create larger sums from the flow of income for future consumption.

This study also attempted to explore cognitive and non-cognitive predictors of saving behavior in preschool children. Specifically, the cognitive (i.e., episodic foresight, executive function, self-control), personality, temperamental, and social (i.e., economic socialization) correlates of saving behavior were examined. Episodic foresight was expected to predict an increase in children's savings as it provides envision of the future (e.g., future consumption).

Executive function was expected to predict their adaptive saving behavior (e.g., saving just enough and flexibly shifting to spending). Planning skill was expected to exclusively predict children's success at the saving game (e.g., being able to compensate for future expenses).

Considering earlier null findings between saving and delay of gratification (e.g., Kamawar et al., 2019), the link between saving and delay of gratification was explored. However, different from earlier studies, a sustained-delay paradigm (rather than a choice delay paradigm) was used to assess children's delay of gratification in this study.

The relations between children's saving, personality, and temperament were not tested before. Therefore, the relations between children's saving, temperament (i.e., effortful control, surgency, and negative affectivity), and their perseverance (a facet of grit personality trait) were explored in this study. Also, the preliminary study provided initial findings on the effect of economic socialization on preschoolers' savings. In this study, I planned to reflect on these relations and explore the impact of economic socialization on preschool children's savings.

Overall, the study aimed to contribute to the literature on two main issues. First, a new method was developed to measure a different function of saving in preschool children. In this method, saving behavior serves to create greater sums

from the regular flow of income (e.g., allowance). Secondly, various cognitive and non-cognitive factors were tested to understand the psychological mechanism of saving behavior in this age group.

2.2 Method

2.2.1 Participants

Seventy-five Turkish speaking preschool children and their parents participated in the study. Data of three children were excluded due to non-cooperation. The final sample included 72 children (41 girls; $M = 63.47$ months, $SD = 10.73$ months, age-range = 43 - 84 months) and their parents. The majority of children were from middle class backgrounds, and the majority of parents were university graduates (see Table 1 for demographics).

To recruit families, the study was announced on the social media accounts of Boğaziçi University Family and Children Research Laboratory, volunteer private preschools, and research-advertisement websites. Additionally, snowballing method was used.

2.2.2 Procedure

The study's procedure and materials were approved by The Ethics Committee for Master and PhD Theses in Social Sciences and Humanities at Boğaziçi University (see Appendix A). Children were tested individually in an approximately 1-hour-long online session. Due to the COVID-19 pandemic, each session was held in a virtual playroom and the whole procedure was video recorded.

Prior to the study, detailed consent forms were provided electronically to the parents, and their verbal consents were obtained at the beginning of the study session. A pilot study with 10 4- to 6-year-old children was run to evaluate the materials and instructions prior to data collection.

Table 1. Demographics of the Child Sample

		<i>n</i>	%
Child's Sex	Boy	41	57%
	Girl	31	43%
Siblings	Has no sibling	29	40%
	Has 1-2 siblings	34	47%
	Missing	9	13%
Mother Education Status	Did not have a high school degree	3	4%
	Graduated from high school	9	13%
	Graduated from a two-year education institution	11	14%
	Graduated from university	30	42%
	Completed an advanced professional degree	10	14%
	Missing	9	13%
Father Education Status	Did not have a high school degree	4	5%
	Graduated from a two-year education institution	4	6%
	Graduated from university	24	33%
	Completed an advanced professional degree	14	20%
	Missing	26	36%
Household Income (per month)	≤ 6.000 TL	16	22%
	6.001 - 12.000 TL	26	36%
	> 12.000 TL	21	29%
	Missing	9	13%

In the study, children participated in a series of behavioral tasks in the following order: expressive language test (Berument & Güven, 2013), saving game, a standardized executive function task (i.e., dimensional change card sorting; Frye, Zelazo, & Palfai, 1995), an episodic foresight task (i.e., picture book; Metcalf & Atance, 2005), a working memory task (i.e., backward digit span task; Carpenter & Alloway, 2019), a delay of gratification task (Barragan-Jason, Atance, Kopp, & Hopfensitz, 2018), and a planning task (i.e., tower of Hanoi; Carlson et al., 2004).

There was a short break after the saving task during which children watched a short cartoon clip. While children participated in the behavioral tasks, their parents also filled out several questionnaires through Qualtrics[®] survey tool (<https://www.qualtrics.com>). The questionnaires appeared in the exact same order. Firstly, the saving questionnaire was given to assess economic socialization. Then, the Children's Behavior Questionnaire Very Short Form (Putnam & Rothbart, 2006) for temperament and the persistence subscale of The Short Temperament Scale for Children (Prior, Sanson, & Oberklaid, 1989) for perseverance were administered. Lastly, parents were asked to complete the Children's Future Thinking Questionnaire (Mazachowsky & Mahy, 2020).

2.2.3 Materials

2.2.3.1 Saving measure

Children's saving was assessed with a new version of the board game (Mazachowsky & Mahy, 2020; Sonuga-Barke & Webley, 1993). In this version, children first participated in a warm-up phase in which they got acquainted with the online transaction. Later, they were invited to play the board game.

In the warm-up phase, the experimenter narrated a shopping adventure of a gender-matched character called Ali/Cemre. In the adventure, Ali/Cemre who had one token would like to buy a toy car/bear that was worth two tokens. The experimenter asked whether the protagonist could buy the toy. As he/she did not have enough tokens, he/she could not buy the toy (i.e., insufficient funding). In the next scene, Ali/Cemre's mother showed up and gave the child two additional tokens (in total, Ali/Cemre had three tokens). The experimenter then asked whether

Ali/Cemre could buy the toy now. Later, Ali/Cemre spent two tokens to buy the toy, and the experimenter asked how many tokens were left (i.e., consequences of spending on funding). In the last scene, Ali/Cemre held the toy that he/she recently bought, and decided to buy another toy, which was also worth two tokens. The experimenter asked whether Ali/Cemre could buy the toy (i.e., consequences of spending on future expenditures). The experimenter corrected incorrect responses with appropriate feedbacks (e.g., “Ali/Cemre has only one token. So, he/she can not buy the toy that is worth two tokens.”).

After the warm-up trials, the board game was introduced. Children were shown two posters depicting an incomplete scene of fictional characters (i.e., PJ Masks or Elsa the Frozen) and asked to choose the one they would like to complete. In the posters, certain locations were left empty, and the experimenter told that if they filled out the gaps with stickers that were on sale at the end of the game, they would have the poster.

On the board game, a road was depicted, and the necessary stickers were located at the end of the road. There were 10 spots in three colors (yellow, green, and red) on the road. The experimenter explained that in yellow spots they would receive tokens. In the red spots, they would visit shops (e.g., arts and crafts store) where they could spend their tokens for one token (e.g., a maze puzzle for one token). In green spots (e.g., park), they would visit the sights of town. Green spots were fillers, and no transaction option was provided in these locations. The order of colors and locations were fixed for all children (see Appendix B for demonstration).

The experimenter gave children one token and told them how/when they receive tokens (i.e., “You will also gain two tokens at each yellow spot.”). Then, the experimenter invited children to count how many tokens they would have throughout

the game (i.e., in total, five tokens). The experimenter explained that at the red location, they could spend the tokens to buy small rewards. Yet, they needed to accumulate at least three tokens during the game (until the end of the road) to buy the stickers and complete the poster. Before starting the tour, the experimenter asked the rule-check question (“How many tokens do you need to accumulate to complete your poster?” [correct answer: three tokens]) and corrected the child if needed. During the game, children visited the locations consecutively. When children landed on a red spot, the photograph of the shop and the treat and appeared on the screen. The experimenter introduced the location (e.g., “Look, this hobby store sells coloring sheet. For one token, you can have one coloring sheet.”) and asked the question (i.e., “What would you like to do? Do you want to save your tokens or buy one coloring sheet?”). If children bought the small treats, the reward appeared instead of a token.

This version of the board game differed from earlier versions (Mazachowsky & Mahy, 2021). Firstly, a warm-up procedure was administered to introduce to children online game setting. Secondly, in the original protocol, the tokens were given at the beginning of the game. However, in this version, the tokens were provided throughout the game to manipulate how children accumulate greater sums. Thirdly, in the original protocol, children were asked to choose a target toy they like the most to save for. However, in this version, the target toy was not only intrinsically desired, but also instrumentally needed to increase children’s urge to save. They were asked to choose the poster they liked the most (intrinsically desired) and asked to save for stickers to complete their poster (instrumentally needed). Lastly, in the original protocol, children were visiting the locations on the board randomly. In this study, children visit the locations consecutively to track how many locations were left better.

There were two dependent variables. The number of tokens saved at the end of the game was the children's saving score (ranging from 0 to 5). Also, children's saving performances within allowance periods were noted to examine their saving patterns across periods (e.g., early savers vs. late savers). Children could have different amounts of tokens in the periods according to their consumption decisions throughout the game. For example, some children would have five tokens at the beginning of the second allowance period. On the contrary, others would have less than five tokens if they spent some of their tokens before. Therefore, a saving ratio score was calculated for each period. The number of leftover tokens at the end of an allowance period was divided by the number of tokens at the beginning of the period to compute period saving performance for each period (0-1).

At the end of the game, without considering children's saving performance, the experimenter gave children all small treats and stickers to complete the poster. After children completed the poster, they were asked to rate the desirability of the rewards (both the poster and small toys) on a 5-point Likert scale (5: "the most liked-happiest face" and 1: "the least liked-saddest face") in order to control for the differences in the desirability of toys. Also, they were asked to rank the toys based on how much they like them (ranging from 1 to 6). Posters received the highest desirability ratings ($M = 4.64$, $SD = .73$) across toys, and 67% of children ranked the poster within their first two choices.

2.2.3.2 Executive function measures

2.2.3.2.1 The dimensional change card sorting (Frye et al., 1995)

The dimensional change card sorting task (DCCS) is a lab-based behavioral task designed to measure children's general executive functioning capacity (Frye et al., 1995; Zelazo, 2006). The game includes two trays (i.e., blue ship and red rabbit) and a series of bivalent cards (i.e., blue ship, red ship, blue rabbit, red rabbit). In the game, the trays appeared on the screen and the experimenter asked children to sort cards (i.e., point or verbally indicate the boxes) to the trays following a specific rule. The experimenter first told children that they were going to play the shape game in which they need to sort cards according to their shapes (pre-switch phase). Two cards were shown as a warm-up to be sure that children understood the rule, and inaccurate responses in the warm-up trials were corrected. In the pre-switch phase, five cards were shown consecutively without any feedbacks or rule-reminder. If children correctly sorted four out of five cards, the experimenter announced the new rule (i.e., color game or post-switch phase). None of the children failed at the pre-switch phase.

In the post-switch phase, the experimenter explained that they would play a different game in which the cards should be sorted according to their colors. The experimenter asked rule check questions and corrected the children if needed. Five cards were shown consecutively, and the rule was reminded after each sorting. If children successfully sorted four out of five cards in the color game, the border version was administered. Only 72% of children could meet this criterion and proceed to the border version.

In the border game, the experimenter said that some cards had black borders on them, and if a card had a border, they needed to play the color game, but if there was no border, they needed to play the shape game. To check whether children understood the rules, the experimenter asked two rule-check questions and administered two warm-up trials. Inaccurate responses were corrected in warm-up trials. Then, 10 cards were shown to children (two of which had borders). After each sorting, the rule was reminded.

The orders of cards and rules were exact for all children. Following the method of Frye et al. (1995), three cards out of five post-switch cards were incompatible with the previous rule (i.e., pre-switch game), and only two cards had borders in the border phase. The number of correct sorting of incompatible cards (in the post-switch phase) and border cards (in the border version) was noted. Almost one-third of the sample failed to play the border game. Therefore, to prevent the drop in the sample size, children's performance only in the incompatible cards of post switch phase was taken as their executive function.

2.2.3.2.2 Tower of Hanoi (Carlson et al., 2004)

The task was developed to assess children's planning skills. In the game, the experimenter invited children to play a panda jumping game in which a panda family jumps across three branches (i.e., child panda, father panda, and baby panda who was introduced at the fourth level). The experimenter explained that the child panda could jump on the back of the father panda, but the father panda could not jump on the back of the child panda. Then, children were asked to identify the pandas and explain the jumping rule to ensure that they understood the rules.

In the game, the experimenter showed another set of pandas located at the right top of the screen and told them that they needed to put their pandas in the exact same order that was depicted at the top right. Since children could not physically move the animals, they were asked to point (or verbally indicate) the moves. The game started with a one-move level in which one move was enough to reach the end state. If the child failed at the first attempt, another chance was provided with verbally reminding the proper rule (e.g., “Father panda never jump on the back of child panda.”). Also, if children reached the end-state but move the pandas more than the minimum number of moves, their attempt was treated as wrong, and they were provided with another trial with an appropriate prompt (e.g., “Good job! But there is a shorter way of doing it. Try it again.”). Succeeding on either one of the trials was enough to proceed to the next level. There were six levels in total, and the game got difficult as children completed levels. The dependent variable was the highest level achieved by the children (ranging from 0 to 6).

2.2.3.2.3 Backward digit span (adapted from Carpenter & Alloway, 2019)

The task assesses children’s working memory capacity. In the game, the experimenter explained the game that they needed to hold orally presented digits in mind and repeat them in a backward manner (“In this game, you repeat whatever I say in backward.”). The experimenter demonstrated the game with a two-digit series and provided two warm-up trials with two number series. If children could not correctly repeat neither of the warm-up trials, the experimenter provided additional four warm-up trials until they correctly repeated the numbers. The experimenter corrected the children if needed. However, 24% of children failed at WM warm-up trials. The test phase was not administered for these children.

Following Carpenter and Alloway (2019), the game started with two-digit series, and the number of digits increased with the levels (in total, six). In each level, there were six trials. Each correct repeat was rewarded with “1” credit. If children correctly repeated the first four series in a level, the experimenter proceeded to the next level, and children received extra credits for not-administered series in the level. However, if children failed at least three times in a level, the game was discontinued. The total score of children was noted (ranging from 0 to 36).

2.2.3.3 Episodic foresight measure

Children’s episodic foresight skills were assessed with the picture book task (Atance & Meltzoff, 2005). The game involved three phases: (a) warm-up, (b) test and (c) control. In the warm-up, the photographs of three familiar locations (i.e., grocery shop, birthday, and pool) were shown. In each location, children were asked to pretend as if they were about to go there (e.g., birthday party) and chose one of the three items (e.g., present, toothpaste, and lunch) to bring to the location. One of the items was correct (e.g., present) and the others were distractors (e.g., toothpaste and lunch). Test trials were only administered to children who chose at least two correct items in three warm-up trials. Only one child failed at the warm-up trials whose episodic foresight score was coded missing.

In test trials, children were shown photographs of five unfamiliar locations (i.e., desert, mountain, waterfall, sea, and winter) and asked to pretend as if they were about to go there (e.g., mountain trip). The experimenter showed three objects (e.g., food box, plate, grass) and asked to select one of three items to bring to the location. In the locations, only one of the items could be needed. For instance, for the mountain trip, the food box was the correct item, which might be needed to eat lunch

while trekking. One item was always semantically related to the location (e.g., grass for mountain) and the other item was a distractor (e.g., plate). Also, they were asked to verbally explain their choice.

In the control phase, the test phase objects were shown again. Children were asked to choose the one they like the most to control whether children's selections were based on their usefulness rather than their desirability. In all scenarios, correct items were chosen more in the test trials. For instance, in the mountain scenario, the correct item (i.e., food box) was selected 88% of the times when it was presented during the test trials. Yet, its selection rate decreased to 37% in the control trials.

The order of the locations within each block was randomized. The locations of correct objects on the screen (left-center-right) were counterbalanced. Children's item selections and verbal explanations in the test phase were scored. Children got "1" points for each correct item selection. If their selections were correct, their verbal explanations were scored based on temporal focus and episodicity (Mazachowsky, Atance, Mitchinson, & Mahy, 2020). Children got "1" point on temporal focus if their explanation was future-oriented (e.g., "I will get thirsty.") or future-uncertain (e.g., "I may get hungry."). They got "0" if their explanation was solely present-oriented (e.g., "I want water.") or unrelated (e.g., "I like food boxes."). For episodicity, they could get "1" additional point if their explanation involved episodic details related to the scene (e.g., "Waterfall may make me wet."). They got "0" in episodicity, if their explanation solely relied on semantic details (e.g., "There is no water in the desert.") or unrelated (e.g., "I like deserts."). Their scores across five trials were averaged to form an aggregate score (0-3). Item selection and verbal explanations were coded by two independent undergraduate assistants. The raters/judges coded 25% of the data ($n = 17$) to establish an agreement. There was a

perfect match between raters in the item selection (100%). Agreement between raters was strong for temporal locus ($\kappa = .83, p < .001$) and episodicity ($\kappa = .80, p < .001$). The disagreements were solved through discussions.

2.2.3.4 Delay of gratification measure

Children's delay of gratification capacity was assessed with a sustained-delay paradigm (Barragan-Jason et al., 2018). In the task, two cartoon clips were presented to children. The clips were from the same cartoon, but one was shorter (10 seconds) than the other (one minute). The experimenter first played both videos to highlight the duration difference and explained that if they wanted to watch the cartoon immediately, they could watch the short video clip, but if they desired to watch the long video clip, they had to wait until the hourglass (delay time) finished. The delay time was unknown to the children. However, they were given an option to switch their choices during the delay (e.g., first chose to wait but later decided to watch the short clip immediately).

There were five different delay times (i.e., 15 seconds, 30 seconds, one minute, two minutes, and three minutes) with five different cartoons. The order of cartoons and delay times were randomized. The dependent variable was the child's delay responses (ranging from 0 to 5). Only two children switched their responses in the delay, and for these children's latest decisions were taken into account.

2.2.3.5 Expressive language measure

Children's expressive language capacity was assessed with Expressive Language Subset of Turkish Expressive and Receptive Language Test (TIFALDI; Berument & Güven, 2013). TIFALDI is an individually administered, norm-referenced language

test developed to assess receptive and expressive language abilities of children aged between 2- to 12-year-old. In this study, the expressive language subset was used. In the test, the experimenter showed a drawing of an object and asked to name it. The test was continued until children wrongly name six objects out of eight.

2.2.3.6 Parental measures

2.2.3.6.1 Saving questionnaire

The questionnaire was developed to assess children's economic socialization, parents' saving behavior, and their childhood economic socialization (please see Appendix C, for Turkish version please see Appendix D). The questions were prepared based on the findings in the preliminary study (Kamber & Tahiroğlu, 2019) and the earlier questionnaires (e.g., Otto, 2009; Webley & Nyhus, 2006).

There were four sections: Demographics, Children's Economic Socialization, Saving Behavior in Adulthood, and Retrospective Childhood Economic Socialization (to assess parents' childhood economic socialization). The Demographics section included questions about child's ages, socio-economic status, and sibling information socialization (please see Appendix C, for Turkish version please see Appendix D).

The Children's Economic Socialization section assessed their child's economic socialization (e.g., "Does your child save in his/her piggy bank?"). There were 13 questions assessing different aspects of economic socialization: (a) teaching saving (i.e., role modeling, advising saving now, advising future saving, advising planned expenditure), (b) income (i.e., allowance, gift money), (c) piggy bank practice (i.e., presence of a piggy bank, the age, active use, and covering expenses), (d) parental expenditure intervention, (e) distinguishing needs and desires, and (f)

changing the expenditure plans. Except for two piggy bank questions, the questions were on a 5-point scale ranging from 1 (*never*) to 5 (*always*) with an optional response (*not applicable*). The piggy bank presence question was on a yes/no scale, and the piggy bank age question was open-ended (please see Appendix C, for Turkish version please see Appendix D).

The Saving Behavior in Adulthood section assessed parents' saving behavior and their budgeting practices. Four questions in this section assessed parents' saving behavior (i.e., preference for saving, saving attitude, and two actual saving questions). The other two questions in this section assessed different aspects of budgeting practices (i.e., engagement in budgeting and changing the expenditure plans). All questions were on a 5-point scale, except for actual saving questions (e.g., "During last year, fundamental household expenses exceeded/*was equal to*/*was less than* household income." and "What percentage of your income did you save?").

The Retrospective Childhood Economic Socialization section was administered to explore whether parents' childhood economic socialization was associated with their child's saving behavior. Parents' childhood economic socialization was assessed in a retrospective manner (e.g., "Do you consider yourself a saver during your childhood?"). There were 11 questions assessing different aspects of economic socialization such as childhood saving behavior, teaching savings, and parental discussions.

2.2.3.6.2 Parent reports of children's future thinking

Children's parent reports of future-oriented skills were assessed with the Children's Future-Thinking Questionnaire (Mazachowsky & Mahy, 2020). The questionnaire was developed to measure children's future-oriented abilities under five subscales

(i.e., saving, delay of gratification, prospective memory, episodic foresight, and planning). Parents were asked to rate 44 statements (e.g., “My child saves items for a time when he/she might be bored.”) about their child’s daily activities on a 6-point scale ranging from 1 (*never*) to 6 (*always*) with three optional responses (*I do not know*, *not applicable*, and *no answer*). Each subscale involved nine statements except for prospective memory which included only eight statements. Subscale scores are calculated by averaging items in the particular subscale (full-scale score was the average of 44 items). Higher scores in the subscales refer to better functioning in the corresponding capacity. Turkish adaptation of the questionnaire was conducted in the preliminary study (Kamber & Tahiroğlu, 2019). Several hard-to-comprehend sentences in the preliminary study were exemplified and re-phased to be used in this project (e.g., “Şimdi kendini hasta hissetse bile birkaç gün içinde kendini daha iyi hissedebileceğini bilir.” [*Fails to understand that if he/she feels sick now, he/she will start to feel better in the days to come.*])

Ten parents were excluded for having more than 20% missing data. Overall, the full scale revealed high internal consistency in full scale ($\alpha = .91$). However, in some subscales, there were low internal consistencies. Although prospective memory ($\alpha = .87$), episodic foresight ($\alpha = .70$), planning ($\alpha = .81$) subscales had acceptable internal consistencies, saving ($\alpha = .52$) and delay of gratification ($\alpha = .58$) subscales had low internal consistencies. It should be noted that the statements in the saving and delay subscales were mostly about children’s school or social lives (e.g., “waits in a long line” or “saves an item to show someone at a later date”), which were drastically minimized during the pandemic. Therefore, in the analyses, only the full-scale score was used as a representative of children’s future-oriented cognition.

2.2.3.6.3 Temperament and personality measures

Very Short Form of Children Behavior Questionnaire (Putnam & Rothbart, 2006) was used to assess children's temperament in three dimensions (i.e., Surgency, Negative Affectivity, and Effortful Control). Parents were asked to rate 36 statements (e.g., "My child seems always in a big hurry to get from one place to another.") on a 7-point scale ranging from 1 (*extremely untrue*) to 7 (*extremely true*) with an optional response (*not applicable*). Each subscale score was calculated by taking the mean of subscale items. Higher scores in a subscale refer to a greater predisposition for the temperamental characteristic. The questionnaire was adapted to Turkish and revealed as a reliable and valid instrument (Akın Sarı, İşeri, Yalçın, Akın Aslan, & Şener, 2012). In this study, surgency, negative affectivity, and effortful control subscales revealed acceptable internal consistencies ($\alpha = .60, .65, \text{ and } .71$, respectively).

Children's perseverance was measured with the persistence subscale of the Turkish version of The Short Temperament Scale for Children (Prior et al., 1989; Yagmurlu & Sanson, 2009). The questionnaire involved 30 statements under four subscales: Approach, Reactivity, Persistence, and Rhythmicity. Parents rated each statement on a scale ranging from 1 (*never*) to 6 (*always*) with an optional response (*not applicable*). In this study, only the persistence subscale of the questionnaire was used to assess children's perseverance, which included seven items (e.g., "My child likes to complete one task or activity before going on to the next."). Parents' ratings in these items were averaged to create a perseverance score. Higher scores in the subscale correspond to a better perseverant predisposition. The subscale revealed high internal consistency ($\alpha = .82$).

2.3 Results

2.3.1 Preliminary analysis

Children could participate in the study via computers, smartphones, or tablets. Computers (79%) were the most preferred device to access the study, which was followed by smartphones (17%) and tablets (4%). There were no device-related differences in children's performances in any of the behavioral tasks. Parents' socioeconomic status, child's sex, and having siblings did not affect children's performances. Only, monthly income was positively associated with children's expressive language, $r(61) = .44, p < .001$.

Preliminary analyses were performed on the saving questionnaire. In Children's Economic Socialization section, four questions assessed parental teaching of saving behavior: Role modeling, advising saving now, advising saving in future, advising planned expenditure. There were moderate to high correlations within these questions (r s ranging from .30 to .68). Similarly, children's income practices (i.e., pocket money, gift money) correlated with each other $r(42) = .32, p = .03$. Therefore, for each concept (i.e., teaching saving and income practices) a composite score was created by averaging the ratings in these questions. The other questions in the section were taken as a single item in the analyses.

The other sections were about parents' current saving behavior and their childhood socialization. Preliminary correlation analyses showed that the majority of these questions were not related to their child's savings and their economic socialization. However, parents' self-proclaimed saving attitude and preference for saving were associated with their child's economic socialization process. These items were also strongly correlated with each other, $r(60) = .63, p < .001$. Therefore, a

composite score of parents' current perceived saving behavior was created by averaging these items. This composite score was included in the analysis as representing parents' saving behavior. Similarly, in the Retrospective Childhood Economic Socialization section, only parents' childhood saving behavior was associated with their child's savings. Therefore, this item was also included in the analysis as representing parents' childhood saving behavior.

2.3.2 Saving behavior

In the saving game, only a small portion of children ($n = 11$) children did not save at all. The rest (85%) engaged in saving and waived at least one current consumption opportunity in the game. Children's total savings in the game (i.e., the number of tokens saved at the end) were correlated with their age, $r(70) = .35, p = .002$. Also, when children were split into two as younger and older group by median split (63.50 months), older children ($n = 36, M = 3.11, SD = 1.41$) saved more than younger peers ($n = 36, M = 2.22, SD = 1.66$), $t(70) = 2.451, p = .02, d = .58$.

Children's total savings were categorized for further investigation (see Table 2). It was seen that although most of children engaged in saving behavior, they differed based on adequateness of their savings against future consumption (Table 2). Some children saved just enough number of tokens for the future reward and spent the rest (adaptive saving; spent 2 and saved exactly 3 tokens), whereas some saved more/less than adequate number of tokens. There was an relation between saving status and children's age, $F(3, 64) = 3.19, p = .03, \eta_p^2 = .13$. Children who engaged in adaptive saving and children who saved more than adequate were older than children who did not save at all, $ps < .05$ (see Table 2). There was no association between saving status and sex (Table 2).

Table 2. Children's Saving Status

Saving Status in the Saving Game:	<i>n</i>	%	<i>M</i> _{age}	<i>SD</i> _{age}
Did not save at all	11 (7 girls)	15	54.91	8.23
Saved less than adequate (less than three tokens)	13 (7 girls)	18	61.77	11.05
Engaged in adaptive saving (saved exactly three tokens)	23 (11 girls)	32	65.17	11.25
Saved more than adequate (more than three tokens)	25 (16 girls)	35	66.56	9.35

In the game, children received tokens at two allowance points. For each period, children's saving performance was calculated to examine saving pattern of children. In each period, the number of left-over tokens at the end of the period was divided by the total income at the beginning of the period to calculate children's period performance. Children were better at saving in the second allowance period ($M = .71$, $SD = .37$) than the first allowance period ($M = .56$, $SD = .36$), $t(71) = 4.04$, $p < .001$, $d = .48$ (please see Table 3 for descriptive statistics of all variables), which suggested that children engaged in saving more as they got closer to future consumption. Although children's saving performances differed between periods, they were correlated with the total savings, $r(72) = .85$, $p < .001$ for the first period and $r(70) = .91$, $p < .001$ for the second period.

Children's saving patterns across allowance periods were explored. If children increased their savings in the second period, they were coded as "*late savers*" ($n = 33$), and if they decreased their savings in the second period, they were coded as "*early savers*" ($n = 15$). If children showed the same saving performance in both periods, they were coded as "*stable savers*" ($n = 13$). Also, some children did not engage in saving at all ($n = 11$), these children were coded as missing as they did not demonstrate any saving patterns in the saving board game. Children's saving patterns influenced in their total savings, $F(2,58) = 21.68$, $p < .001$, $\eta_p^2 = .43$. Stable savers ($M = 4.54$, $SD = 0.52$) accumulated more revenue than late ($M = 3.00$, $SD = 0.83$) and early savers ($M = 2.27$, $SD = 1.34$), and late savers also created greater

reserves than early savers, $ps < .05$. Although saving patterns led to different amounts of savings at the end of the game, children's saving patterns were not associated with any psychological variables tested in the study, $ps > .05$.

Table 3. Descriptive Statistics of the Variables in Study 1

	<i>N</i>	<i>M</i>	<i>SD</i>	Min	Max
Saving Game: Total Savings	72	2.67	1.59	0	5
Saving Game: 1 st Period Score	72	.57	.36	0	1
Saving Game: 2 nd Period Score	72	.71	.37	0	1
Expressive Language	72	125.71	11.30	91	141
Backward Digit Span	56	7.02	3.77	0	18
Tower of Hanoi	70	4.26	2.14	0	6
Delay of Gratification	67	2.55	1.80	0	5
DCCS Post Switch (incompatible cards)	70	2.14	1.09	0	3
DCCS Border (border cards)	52	1.44	0.64	1	2
Picture Book	70	2.23	0.73	0.40	3
CFTQ Full Scale	52	4.37	0.61	3.17	5.42
CBQ Surgency	62	4.60	0.73	2.83	6.25
CBQ Negative Affectivity	62	4.83	0.77	2.67	6.50
CBQ Effortful Control	62	5.68	0.65	3.42	6.83
Perseverance	62	4.12	0.86	2	6
CES: Change Plans	59	2.68	0.94	1	5
CES: Income	59	3.12	1	1	5
CES: Expenditure Intervention	53	3.57	1.07	1	5
CES: Teaching	62	3.75	0.65	2.33	5
CES: Piggy Bank (age)	57	2.78	0.82	1	4.5
CES: Piggy Bank (active use)	57	3.77	0.98	1	5
CES: Piggy Bank (covering expenditures)	55	3.75	0.97	1	5
CES: Distinguishing Needs and Desires	60	3.68	0.79	2	5
Parents' Perceived Saving Behavior	62	3.40	0.81	1.5	5
Parents' Childhood Saving Behavior	62	3.56	0.97	1	5

Note: DCCS: Dimensional change card sorting task; CFTQ: Children's Future Thinking Questionnaire; CBQ: Children's Behavior Questionnaire; CES: Childhood Economic Socialization Section of Saving Questionnaire; Change plans: Parents' changes in the expenditure plan; Expen. Interv: Expenditure Intervention; Teaching: Teaching of saving by parents; Piggy Bank (age): The age when he/she had his/her first piggy bank; Piggy Bank (active use): Active usage of piggy bank; Piggy Bank (covering expenditures): Covering expenditures with the money accumulated in the piggy bank.

Lastly, in the game, children chose to save either for PJMasks (preferred by 67% of children) or Elsa of Arendelle (preferred by 33% of children). Children's poster selection did not affect their performance in the game. Two desirability check

questions were asked. Firstly, children rated the treats (i.e., the poster and small toys) on a 5-point Likert scale. Secondly, they ranked the treats based on their preference. The majority of children (67%) ranked the poster within the first two choices. However, neither rankings nor desirability ratings were associated with children's savings.

2.3.3 Relations between saving and future-thinking

Pearson's Correlation tests were run to explore the relation between saving and future thinking.¹ Total savings was positively correlated with episodic foresight (the picture book task) even after controlling for age, $r(67) = .29, p < .02$ (Table 4). However, there was no relation between saving and parental report future thinking score (i.e., the Children's Future Thinking Questionnaire).

2.3.4 Relations between saving and executive function

To explore the relations between saving and executive function, Pearson's Correlation tests were run. Children's executive function was assessed with their performance in the incompatible cards of post-switch phase of the DCCS. Planning (tower of Hanoi) and executive function (post-switch phase of DCCS) were positively correlated with children's savings $ps < .05$. However, working memory was not related to saving behavior (Table 4).

¹ In Pearson's correlation analyses, although there were many correlational analyses, no p-adjustment method was conducted because these correlation matrices were created for only exploratory reasons (please see Tables 4, 5, and 6). The hypotheses were tested with regression analyses.

Table 4. Pearson Correlation Tests Between Saving Behavior and Cognitive Capacities in Study 1

	Age (month)	Saving Game	1	2	3	4	5	6
1. Expressive Lang.	-.10	.17 (.22)						
2. DCCS Post Switch Incomp. Cards	.17	.23* (.24*)	.09 (.11)					
3. ToH	.38**	.33** (.23)	.16 (.22)	.45** (.43**)				
4. Backward Digit	.44**	.25 (.11)	.26 (.34*)	.39** (.36**)	.42** (.30*)			
5. DoG	.04	-.13 (-.16)	.20 (.21)	.02 (.10)	.04 (.03)	.11 (.10)		
6. Picture Book	.39**	.38** (.29*)	.09 (.14)	.27* (.22)	.33** (.21)	.28* (.13)	.08 (.73)	
7. CFTQ Full Scale	.41**	-.08 (-.27)	.01 (.06)	-.05 (-.14)	.19 (.04)	.15 (-.04)	-.11 (-.14)	.09 (-.09)

Note: Age-controlled correlations are reported in the parentheses. Saving Game: Total savings in the saving game; Expressive Lang: Expressive language; DCCS Post Switch Incomp. Cards: Dimensional change card sorting post switch incompatible cards; ToH: Tower of Hanoi; Backward Digit: Backward digit span task; DoG: Delay of gratification task; CFTQ Full Scale: Children's Future Thinking Questionnaire full scale score.

* $p < .05$. ** $p < .01$.

It was hypothesized that children's executive function would predict their engagement in adaptive savings. Four saving statuses have been defined in the game: (a) no saving, (b) saving less than needed, (c) adaptive saving, and (d) saving more than needed (see Table 2). The adaptive saving behavior yielded the best outcome for the game. These children's savings were adequate to buy the target toy, and they have spent unnecessary two tokens for small treats. Therefore, children's saving statuses were re-categorized based on their adequateness of their savings. Children who did not save at all ($n = 11$) and children who saved less than adequate ($n = 13$) were coded as "*not adequate*"; also, children who saved more than adequate ($n = 25$) were coded as "*more than adequate*". Lastly, children who engaged in adaptive saving and accumulated only adequate number of tokens for the stickers and spent the rest (i.e., saved only three tokens) were coded as "*adequate*" ($n = 23$).

Multinomial Logistic regression was run to investigate whether children's executive function performance assessed with the performance in the DCCS predicted their adaptive saving behavior. Age was added in the first step, and executive function was added in the second step. The increase in the second model revealed a significant improvement in model fit, $\chi^2(2) = 8.36, p = .02$. Executive function predicted adaptive saving behavior of children. As children had higher scores in the standardized executive function task, they were more likely to engage in adaptive saving, $\beta = .82$, Wald $\chi^2(1) = 6.50, p = .01$.

Also, it was hypothesized that children's planning would predict their actualization of saving intention. In the saving status of children (see Table 2), saving more than adequate and adaptive saving were enough to carry out future intention (i.e., buying the stickers at the end of the game for the poster); whereas no saving and saving less than adequate did not cover future consumption. Therefore, children's savings status was re-categorized based on their success in the saving game. Children were coded as "*success*" if they were able to buy the stickers, or "*fail*" if they could not buy the toy at the end. Binomial Logistic regression was run to test whether children's planning skills (assessed with the tower of Hanoi) predicted the actualization of the saving intention in the game. At the first step of the model, age was added. Planning skill (assessed with the tower of Hanoi) was added in the second step. Binomial Logistic regression showed that adding planning in the second step increased the variance explained, $\chi^2(1) = 4.79, p = .03$. An increase in planning skill predicted the likelihood of actualizing saving intention in the saving game, $\beta = .30$, Wald $\chi^2(1) = 2.16, p = .03$. Additionally, it was plausible that children with better planning skill were more likely to budget their expenses so that they only saved as much as needed and spent the rest. Therefore, to explore whether planning

was associated with adaptive saving behavior, Multinomial Logistic regression was run. Following the previous Multinomial Logistic regression model, age was added in the first step, and planning was added in the second step. Adding planning in the second step did not increase the variance explained, $\chi^2(2) = 4.86$, $p = .09$. Also, neither model was significant, $ps > .05$.

2.3.5 Relations between saving and self-control

Pearson's Correlation test was run for the relation between saving and self-control (assessed with delay of gratification). No statistically meaningful association between self-control and the saving game was observed (Table 4). Further analyses were run to explore its relationship with children's saving statuses (adequate saving and successful saving statuses). Again, there was no relation.

2.3.6 Relations between saving, personality, and temperament

Children's temperamental characteristics were assessed under three main dimensions: Negative affectivity, effortful control, and surgency. Additionally, children's perseverance (a facet of the personality type of Grit) was measured. To explore the relations between saving, temperament, and personality, Pearson's Correlation tests were run (Table 5). Only negative affectivity was positively associated with children's total savings even after controlling for age, $r(59) = .26$, $p = .046$.

Table 5. Pearson Correlation Tests Between Saving Behavior, Personality, and Temperament in Study 1

	Age (month)	Saving Game	Expressive Language	CBQ Surgency	CBQ Negative Affectivity	CBQ Effortful Control
CBQ Surgency	-.03	-.19 (-.19)	.01 (.01)			
CBQ Negative Affectivity	.19	.30* (.26*)	.02 (.04)	-.28* (-.28*)		
CBQ Effortful Control	-.10	-.23 (-.21)	.21 (.21)	-.23 (-.24)	.15 (.18)	
Perseverance	-.07	-.12 (-.11)	.13 (.13)	-.10 (-.10)	-.08 (-.07)	.43** (.42**)

Note: Age-controlled correlations are reported in the parentheses. CBQ: Children's Behavior Questionnaire.

* $p < .05$. ** $p < .01$.

2.3.7 Relations between children's saving behavior and economic socialization

Children's economic socialization was assessed under six dimensions: (a) parental teaching of saving, (b) parental intervention on children's expenditures, (c) their piggy bank practices, (d) income experiences, (e) their understanding of needs and desires, and (f) changing the expenditure plans. Additionally, parents' saving behavior and their childhood saving behavior were included.

None of the childhood economic socialization variables were correlated with children's savings in the behavioral task. Only, parents' childhood saving behavior was positively correlated with their child's savings after controlling for age, $r(59) = .28$, $p = .03$ (see Table 6). Childhood income practice was positively correlated with their piggy bank practices, and teaching of saving was positively correlated with distinguishing needs and desires ("Do you discuss with your child the differences between needs and desires?"), $ps < .05$. Further, parents' perceived saving behavior was positively correlated with their teachings of saving and negatively correlated with their changes in expenditure plans after controlling for age, $ps < .02$ (Table 6). Almost all of the preschool children in the sample (80%) had a piggy bank.

Table 6. Pearson Correlation Tests Between Saving Behavior and Childhood Economic Socialization in Study 1

	Age	Sav.	1	2	3	4	5	6	7	8	9
1. Chan Plans	.14	.19 (.15)									
2. Income	.16	.13 (.08)	.07 (.05)								
3. Exp. Interv.	.05	.02 (.01)	.18 (.17)	-.03 (-.04)							
4. Teach	.29*	.04 (-.07)	-.14 (-.19)	.25 (.22)	.22 (.21)						
5. Piggy Age	.07	.02 (-.01)	.11 (.11)	-.32* (.33*)	-.11 (-.11)	-.02 (-.04)					
6. Piggy Act.	.17	.02 (-.05)	-.01 (-.03)	.30* (.29*)	.16 (.15)	.16 (.11)	-.23 (-.25)				
7. Piggy Cover	.33*	.11 (-.01)	.05 (.01)	.34* (.31*)	.02 (.01)	.24 (.16)	-.02 (-.04)	.29* (.25)			
8. Distin. Needs	.03	-.21 (-.24)	-.21 (-.21)	-.08 (-.08)	-.05 (-.05)	.44** (.46**)	.25 (.25)	.07 (.06)	.22 (.22)		
9. Par. Saving	.21	.14 (.07)	-.27 (-.30*)	-.05 (-.08)	.13 (.12)	.47** (.44**)	.01 (-.01)	-.14 (-.18)	.11 (.04)	.24 (.24)	
10. Par. Child. Saving	-.15	.21 (.28*)	-.16 (-.14)	-.12 (-.10)	.16 (.17)	.20 (.26)	-.01 (-.01)	-.08 (-.06)	.04 (.10)	.01 (.01)	.32* (.36*)

Note: Age-controlled correlations are reported in the parentheses. Sav: Saving Game; Change plans: Parents' changes in the expenditure plan; Expen. Interv: Expenditure Intervention; Teach: Teaching of saving by parents; Piggy age: The age when he/she had his/her first piggy bank; Piggy act.: Active usage of piggy bank; Piggy cover: Covering expenditures with the money accumulated in the piggy bank; Distin. Needs: Distinguishing needs and desire; Par. Saving: Parents' perceived saving behavior; Par. Child. Saving: Parents' childhood saving behavior.

* $p < .05$. ** $p < .01$.

2.3.8 Predictors of saving behavior

Finally, a hierarchical linear regression was run to examine the predictors of saving behavior. Children's total savings at the end of the game was taken as a representative of their saving behavior. Only correlated variables were included in the model. At Step 1, children's age was included. At Step 2, children's planning (Tower of Hanoi), executive function (DCCS), and episodic foresight (Picture Book) were included. At Step 3, negative affectivity and parents' childhood saving behavior were added. At Step 4, the interactions between age and variables were included in the model only for exploratory reasons. The results showed that in the first step, the

model predicted children's savings, $R^2 = .13$, $F(1, 58) = 8.44$, $p = .01$. An increase in children's age predicted higher amounts of savings, $\beta = .05$, $p = .01$. Further, adding children's cognitive skills into the model increased the variance explained by the model, $\Delta R^2 = .15$, $F(3, 55) = 3.71$, $p = .02$. However, only episodic foresight skill predicted an increase in savings, $\beta = .59$, $p = .04$. In Step 3, adding negative affectivity and parents' childhood saving behavior did not increase the variance explained by the model, $\Delta R^2 = .06$, $F(2, 53) = 2.40$, $p = .12$. However, the model was still significant, $R^2 = .58$, $F(6, 53) = 4.44$, $p = .001$. In Step 3, only episodic foresight skill ($\beta = .57$, $p = .04$) was still a significant predictor of saving behavior (Table 7). Adding interactions in the last step did not increase the variance explained, and none of the interactions reached significance, $ps > .05$. Therefore, these coefficients were not discussed.

Table 7. Predictors of Saving Behavior in Children

Outcome: Children's savings				
Predictors:	<i>SE(B)</i>	β	<i>p</i>	R^2
Step 1				.13**
Age	.02	.05	.01	
Step 2				.28**
Age	.02	.03	.16	
ToH	.10	.12	.24	
DCCS	.19	.20	.30	
Picture Book	.27	.59	.04	
Step 3				.34**
Age	.02	.03	.09	
ToH	.10	.05	.60	
DCCS	.19	.11	.57	
Picture Book	.27	.57	.04	
Parents' Childhood Saving	.20	.27	.14	
Negative Affectivity	.24	.35	.15	

Note: ToH: Tower of Hanoi; DCCS: Dimensional change card sorting task.

* $p < .05$. ** $p < .01$.

2.4 Discussion

This study investigated whether preschool children could save to create a greater reserve and how psychological factors facilitate their saving behavior. The results revealed that majority of the children engaged in savings at least once, and importantly 66% of the sample successfully built up a reserve to meet their future needs. This finding showed that children not only can save to secure their existing resources (e.g., a couple of marbles out of five marbles: Metcalf & Atance, 2011) but also can save to accumulate greater reserves for future use.

With the allowance period system, the study demonstrated that preschool children can also have different saving strategies. In this study, some children increased their savings as they got closer to the future expenditure (i.e., late savers), whereas another group of children showed an opposite trend and saved less (i.e., early savers). Yet, others kept their engagement in saving behavior at the same level throughout the game (i.e., stable savers). Increasing savings late in the game or keeping it stable were revealed as more efficient strategies to accumulate greater sums. Early savers might have lost their motivation to save or got distracted by the small treats throughout the game, which may have led them to save less than intended. On the contrary, late or stable savers could be more perseverant or goal oriented as they stuck on their earlier saving attitude. However, there were no relations between children's saving patterns and psychological variables tested in this sample. The game actually promised only minimal economic engagement. It only involved two allowance periods, five tokens, and one target toy (that costs three tokens). Therefore, the differences between saving patterns were not very distinct from each other (e.g., one additional saving decision in the first period or second period led children to be categorized as late or early savers). Future studies may

increase the complexity of the tasks (e.g., five allowance points) to make the setup more fruitful to observe saving patterns. The methods that were used to assess school-aged children's saving strategies might set an example for future studies. Otto et al. (2006) developed a version of the board game in which the length of the game was unknown for children, and they modified their board games with additional shortcuts, and fluctuations in income (e.g., chance cards circles where children could lose or gain tokens). They have found that 6- and 9-year-old children rarely adopted a saving strategy, but 12-year-old children frequently invested tokens in banks or took shortcuts. Similar modifications might also be used in future studies to observe preschoolers' saving strategies.

In the literature on preschoolers' savings, there were mixed findings regarding the age-related increase in saving behavior (e.g., Atance et al., 2017; Kamawar et al., 2019). The studies using the marble game paradigm mostly failed to find an age effect (Kamawar et al., 2019; Metcalf & Atance, 2011). However, similar to other studies using the board game paradigm (Mazachowsky & Mahy, 2020), this study showed an age-effect on preschoolers' savings using the board game. The board game paradigm might be a more age-appropriate method to assess these young children's savings.

Children's ability to envision themselves in future events (i.e., episodic foresight) was argued to be a central ability supporting their saving behavior (Metcalf & Atance, 2011). Supporting this claim, in the study, better episodic foresight skills predicted higher levels of savings even after other factors were included in the model. This finding may suggest that better forecasting (i.e., thinking about future self and his/her needs) may enable preschool children to save more for their future self.

Saving is a complex decision-making process such that individuals need to update their saving status and change their decisions accordingly (e.g., saving more if it does not suffice, or stop saving if one has already accumulated enough). Better executive functioning may support children's competency in this process (Friedline, 2015; Lee & Carlson, 2015). Developmental gains in executive function may enable children to shift between saving decisions whichever fits the context better (Lee & Carlson, 2015). Also, as adult studies reported (e.g., Rabinovich & Webley, 2007; Shefrin & Thaler, 1988), planning may prevent individuals not to save less than needed. In this study, supporting adult studies (e.g., Rabinovich & Webley, 2007), children's planning skills predicted their success in the saving game. Also, children's performances in a standardized executive function measure (i.e., DCCS) predicted their adaptive saving behavior; flexibly shifting across saving and spending decisions in order to maximize their benefits (i.e., save three tokens and spend the rest) may require a level of executive function.

Unexpectedly, children's working memory capacities were not related to their savings. A level of working memory might be required in children's mental computations (e.g., updating savings). Therefore, a relation between working memory and saving behavior was expected. Non-significant findings could potentially be explained by the fact that 24% of the sample could not pass the practice trials and they were dropped out from the working memory task, which may have hindered the relation. On the other hand, core executive function skills might differ from each other in supporting children's saving behavior. The standardized executive function task used in this study is often labeled as a cognitive flexibility task, although it also requires inhibitory control to suppress earlier rules and working memory to update relevant rules (Doebel & Zelazo, 2015). Therefore, an alternative

explanation could be that cognitive flexibility may exclusively support adaptive saving, and planning might be associated with the realization of the saving goal. Other core executive function skills (i.e., working memory and inhibitory control) might support saving behavior in different ways, or they might not be related at all. Atance et al. (2017) failed to reveal relations between saving behavior, working memory, and inhibitory control in preschool children. Future studies should include a battery of executive function tasks assessing all core executive function skills to track possible separate roles.

Another objective of the study was to explore the relations between saving and self-control. In this study, a sustained delay paradigm was adopted to assess children's delay of gratification skills differently than the earlier studies which were administered choice delay paradigms (e.g., Kamawar et al., 2019). However, there was again no statistically meaningful relationship between capacities. Sonuga-Barke and Webley (1993) argued that saving and delay of gratification are similar in some ways yet different capacities since in delaying, simple waiting is enough to be a '*delayer*'; whereas, in saving, children have to take several saving decisions that need to add up to meet the saving goal (e.g., accumulating \$50 by saving from weekly allowances for a while). Therefore, the studies might have failed to reveal a relationship. Further investigation on this topic may consider using multiple measurement tools (e.g., behavioral tasks and parental reports) to capture self-control comprehensively. Moffit et al. (2011) administered multiple tools to assess self-control and revealed a link between childhood self-control and financial wealth in adulthood. With a similar method, the relation between children's savings and self-control could be explored more detailly.

This study also attempted to explore the effect of personality and temperament on children's savings. The results showed that saving behavior was not related to perseverance and effortful control, but it was positively associated with negative affectivity. Children with a greater predisposition to negative affectivity often struggle to regulate negative emotions and tend to show higher levels of sadness, fear, and frustration (Putnam & Rothbart, 2006). Furthermore, negative affectivity was found to be positively correlated with a poor performance in future-oriented decision-making tasks (e.g., gambling tasks; Garon & Moore, 2006). Therefore, this positive relation was not expected. In our sample, children's negative affectivity was also associated with a better performance in executive function tasks. Therefore, this finding might be sample-specific and should be replicated with different samples.

A great deal of economic socialization occurs through daily observation. Children observe their parents and pick up cues about financial matters (Gudmunson & Danes, 2011). Therefore, economic socialization may facilitate saving behavior in children. However, economic socialization factors were not related to children's saving except for parents' childhood saving. However, parents' childhood saving did not predict their child's saving in the regression model. In the post-experiment discussions, parents reported that they have been shocked about how they have saved (have not saved). Sonuga-Barke and Webley (1993) highlighted a similar bias that adults undermine children's economic engagements as they do not know finance well. However, their economic behaviors are constructed within their social life (e.g., they save marbles or play cards; Sonuga-Barke & Webley, 1993). Therefore, the discrepancy between what parents think and children do may cause null findings between their savings and economic socialization.

Overall, Study 1 showed that children can engage in saving and several psychological factors discussed above support their saving behavior. In Study 2, similar relations were investigated in adults to examine saving behavior in different life periods and compare the roles of psychological variables on their saving behavior.

CHAPTER 3

STUDY 2

In the previous chapter, preschool children's saving was examined. In daily life, these young children mostly engaged in saving for future enjoyment (e.g., bicycle). However, in adulthood, savings might have much more crucial effects (Skinner, 2007). For instance, saving less has negative outcomes on future well-being (e.g., retirement; Poterba, Venti, & Wise, 1996). The ongoing global pandemic also provides an extreme example of the importance of saving. Almost 50 million people around the globe are estimated to suffer from poverty due to pandemic-related economic shrinkage (Buheji et al., 2020). Drastic depletion in savings has been observed, suggesting that individuals dip into their savings to meet their needs during these rainy days (e.g., Martin, Markhvida, Hallegatte, & Walsh, 2020). Against the benefits, individuals still struggle to save, and they mostly end up with less amount of savings than they had planned to have (Rabinovich & Webley, 2007). Therefore, more studies are needed to understand the saving decision-making process and reveal factors facilitating saving behavior.

The studies reviewed in Chapter 1 revealed that self-control, planning, and future orientation are fundamental capacities supporting saving behavior; also, childhood economic socialization and personality explained a considerable proportion of variance in their savings (Asebedo et al., 2019; Gudmunson & Danes, 2011; Rabinovich & Webley, 2007). In this study, these relations were examined altogether to understand the psychological mechanism of saving behavior and how each factor supports adults' engagement in saving behavior.

Adults' financial socialization in the economic world is not a stable process but develops through periods and events. One of these periods is college years. College years are crucial in terms of financial socialization as these young college students are getting independent in the market for the first time and start compensating for their expenses by themselves. For instance, they have two credit cards on average and even some of them struggle with credit debts (Borden, Lee, Serido, & Collins, 2008; Nelson, Lust, Story, & Ehlinger, 2008). Yet, at the same time, most of these students are still financially dependent on their parents; the majority of them are not employed and only a small portion of them receive low internship salaries (Borden et al., 2008). This unique sample characteristics of college students may lead them to develop and implement different savings habits and strategies to deal with financial scarcities compared to other adult populations (e.g., middle-aged and elders). For instance, they may negotiate with their parents for extra cash to substitute their expenses (please see Furnham, 1999b for similar findings with adolescents). These differences of college students drew attention in the field, and there are many studies on their economic behaviors (e.g., Kidwell & Turrisi, 2004). On a similar concern, I attempted to measure the saving behavior of both college students and non-student adults in a community sample to explore possible generational differences.

3.1 Objectives

Similar to earlier studies (Nyhus & Webley, 2013; Strömbäck et al., 2017), adults' future orientation, self-control, and engagement in planning (i.e., budgeting) were expected to predict their saving behavior. Regarding personality characteristics, adults' savings were expected to be positively associated with conscientiousness, and

negatively correlated with extraversion and neuroticism. Since there are mixed findings regarding the link between agreeableness and openness to experience (Asebedo et al., 2019; Canova & Manganelli Rattazzi, 2004), these traits were explored as well. Also, experiencing a rich childhood economic socialization (e.g., practicing saving in a piggy bank, engaging in saving during childhood, or discussing financial matters with parents) was expected to predict adults' current savings. Lastly, the possible differences between samples (i.e., students vs. non-students) would be explored.

3.2 Method

3.2.1 Participants

There were two samples in the study: Student and community samples. In the student sample, 119 college students participated in the study via Boğaziçi University Research Participation System. To reach the adults in the community sample, two methods have been used. Snowball sampling was one way of reaching community sample, and 212 adults participated in the study via snowball sampling method. Also, the parents whose child participated in the study were recruited if they wished to do so. Twenty-six parents from the child study participated in this study. In total, there were 238 adults in the community sample.

All data collection was online via Qualtrics[®] survey tool (<https://www.qualtrics.com>). The experimenter had no control over the duration of the study or participants' break-taking patterns. Therefore, before the data collection, a pilot testing with undergraduate assistants was run to estimate the average completion duration. With a normal pace of reading, the average completion duration

was estimated as 15 minutes. Thus, completing the study in under five minutes was determined as a cut-off point. In the student sample, three participants were excluded from the study due to violating this criterion and their suspicious response patterns (e.g., choosing the same response in every item of the scales). In the community sample, none of the participants completed the survey under five minutes.

In the community sample, the main target was non-student adults. However, some self-claimed students ($n = 35$) who might share close characteristics with the student sample also participated in the study. These participants were excluded from the community sample.²

Lastly, outlier analyses were run. In the student sample, three students were exceptionally older than ($M = 27.67$, $SD = 2.08$) the rest of the sample ($M = 20.48$, $SD = 1.34$). Similarly, in the community sample, some non-student participants were exceptionally older ($n = 6$, $M = 64.67$, $SD = 3.56$) or younger ($n = 5$, $M = 21.6$, $SD = 0.89$) than the rest of the sample. These participants were also excluded from the samples.

The final sample of college students included 113 students (88 females and 1 not specified, $M = 20.48$, $SD = 1.34$, age-range = 18-24 years). The final sample of the community sample included 192 adults (132 females; $M = 36.18$, $SD = 11.34$, age-range = 23-61 years).

The majority of adults in the community sample (76%) were holding bachelor's degree, which was followed by high-school graduates (14%), higher education institution graduates (7%), college dropouts (2%), high school dropouts (1%), and elementary school graduates (1%). In both samples, most of the

² The self-claimed students in the community sample took the exact measures in the same order as the student sample. Therefore, 35 college students in the community sample can be transferred to the student sample. I decided to run the analyses first excluding them, and then including these participants into the student sample. There was no meaningful difference between the results (included vs. excluded). Therefore, only excluded analyses were reported.

participants were from middle-class backgrounds. However, adults in the community sample reported higher household income than the students, $t(303) = 3.97, p < .001$ (see Table 8). As expected, the majority of students (87%) were not employed at the time of testing. Also, the majority of the community sample (69%) were employed at the time of testing (Table 8).

Table 8. Demographics of the Community and Student Samples

		Community Sample		Student Sample	
		<i>n</i>	%	<i>n</i>	%
Gender	Male	60	31%	24	21%
	Female	132	69%	88	78%
	Other	0	0%	1	1%
Employment Status	Full-time	103	54%	2	1%
	Part-time	29	15%	13	12%
	Unemployed	60	31%	98	87%
Household Income (per month)	≤ 6.000 TL	47	25%	45	40%
	6.001 - 12.000 TL	87	45%	47	42%
	> 12.000 TL	58	30%	21	18%

3.2.2 Procedure

The study's procedure and materials were approved by The Ethics Committee for Master and PhD Theses in Social Sciences and Humanities at Boğaziçi University. Adults participated in the study online via Qualtrics® survey tool (<https://www.qualtrics.com>). Consents of the participants were obtained at the beginning of the session. The order of questionnaires was fixed: (a) saving questionnaire, (b) Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004), (c) Consideration of Future Consequences Scale (Jaireman et al., 2012) to assess future orientation, and (d) Big Five Inventory (Benet-Martinez & John, 1998) for the assessment of personality. Students' participations were compensated with course credit. The community sample took the study voluntarily without any compensation.

3.2.3 Measures

3.2.3.1 Saving measure

Participants' saving behavior was assessed with the same questionnaire reviewed in the Method section of Chapter 2. The questionnaire involves four sections:

Demographics, Saving Behavior in Adulthood, Retrospective Childhood Economic Socialization, and Children's Economic Socialization (see Appendices C and D for the questionnaire). The last section was only administered if participants had a 4- to 6-year-old child. However, only 19% of non-student adults met the requirements to complete Children's Economic Socialization section. Therefore, the section about their child's economic socialization (i.e., Children's Economic Socialization) was excluded from the study due to the low level of participation.

The first section (i.e., Demographics) included questions about participants' age, socio-economic status, parenting status (i.e., whether they are parents, and if they are, the number of children they have; please see Appendices C and D). The Saving Behavior in Adulthood section included six questions assessing participants' saving behavior and budgeting. Saving behavior was assessed from three aspects: (a) their preference for saving in a hypothetical financial scenario, (b) their self-proclaimed saving attitude, and (c) their actual savings during the last year. Their budgeting practices were assessed with (a) their engagement in budgeting, and (b) their changes in the expenditure plans. All questions were on a 5-point scale, except for actual saving questions (e.g., "During last year, fundamental household expenses *exceeded/was equal/was less* than household income." and "What percentage of your income did you save?").

In the next part of the questionnaire (i.e., Retrospective Childhood Economic Socialization), participants were asked to rate their childhood economic socialization in 11 questions (e.g., “Have your parents intervened in your expenditures during your childhood?”). In this section, different aspects of childhood economic socialization were measured: (a) self-reported saving behavior during childhood, (b) their parents’ saving behavior, (c) parental discussion on savings, (d) teaching saving behavior, (e) parental expenditure intervention, (f) income (i.e., employment and allowance), and (g) piggy bank practices (i.e., presence of a piggy bank, age, active use, and covering expenditures with a piggy bank). All questions were on a 5-point scale ranging from 1 (*never*) to 5 (*always*) except for childhood employment experience (on a yes/no scale), and piggy bank practices (presence question was on yes/no scale and age question was on a continuous scale).

3.2.3.2 Self-control measure

The Turkish version of Brief Self-Control Scale (Nebioğlu, Konuk, Akbaba, & Eroglu, 2012; Tangney et al., 2004) was used to assess self-control. The participants were asked to rate 13 statements (e.g., “I am good at resisting temptation.”) on a 5-point scale ranging from 1 (*not much like me*) to 5 (*very much like me*).

Participants’ responses were averaged to create a self-control score. An increase in the score refers to a better self-control capacity. High internal consistencies in both samples were observed (for the student sample, $\alpha = .87$; and for the community sample, $\alpha = .79$).

3.2.3.3 Future orientation measure

Turkish version of Consideration of Future Consequences Scale (Cinan & Doğan, 2013; Joireman et al., 2012) was used to measure participants' future orientation. The questionnaire involves 14 statements on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly disagree*).

Half of the statements were about present orientation (e.g., "I only act to satisfy immediate concerns, figuring the future will take care of itself."), and the rest were about future orientation ("When I make a decision, I think about how it might affect me in the future."). The ratings of present orientation (or future orientation) statements were averaged to form the subscale score. Higher scores in the subscales refer to higher levels of concerns about the future/or immediate consequences of the actions. For both the student and community samples, high internal consistencies were obtained in each subscale (as ranging from .77 to .82).

3.2.3.4 Personality measure

Turkish version of Big Five Inventory (Benet-Martinez & John, 1998; Sümer & Sümer, 2003) was used to assess personality in five dimensions (i.e., extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience). There were 44 statements (e.g., "I am someone who is talkative.") rated on a 5-point scale ranging from 1 (*strongly disagree*) and 5 (*strongly agree*).

Each subscale score was created by averaging the ratings in specific items. Higher scores in each subscale correspond to a greater predisposition for that particular personality trait. All subscales revealed acceptable internal consistencies for both samples (as = .69 - .89).

3.3 Results

3.3.1 Preliminary analysis

There were between-sample differences in the variables assessed in the study. The community sample had higher scores in self-control, extraversion, agreeableness, and conscientiousness than the student sample, $ps < .01$ (see Table 9). Also, they were more likely to have employment experience during their childhood (e.g., summer job) than the students, $\chi^2(1, N = 305) = 26.86, p < .001$. On the other hand, students reported higher ratings in childhood saving behavior and neuroticism subscale than the community sample, $ps < .05$ (Table 9).

Within samples, there were gender differences. In the student sample, female participants reported higher neuroticism score ($n = 88, M = 3.47, SD = .77$) than male participants ($n = 23, M = 2.66, SD = .46$), $t(109) = 4.82, p < .001$. In community samples, female participants reported higher neuroticism, extraversion, agreeableness, conscientiousness, openness to experience, and less self-control than male participants, $ps < .05$. In the following analyses, due to a smaller number of male participants in both samples, the data was not split by gender, but gender was added into the regression model as a control variable during hypotheses testing. In both samples, there was no effect of socio-economic background on the variables assessed in the study, $ps > .05$.

Table 9. Descriptive Statistics of the Variables in Study 2

	Community Sample					Student Sample				
	<i>N</i>	<i>M</i>	<i>SD</i>	Min.	Max.	<i>N</i>	<i>M</i>	<i>SD</i>	Min.	Max.
Perceived Saving Behavior	192	3.21	0.84	1.50	5	113	3.52	0.84	1	5
Present Orientation	185	3.33	1.10	1.00	6.14	113	3.50	0.98	1.43	6.57
Future Orientation	185	5.26	0.86	2.43	7	113	5.23	0.73	3.14	6.86
Self-control	190	3.58	0.58	1.85	4.85	113	3.32	0.68	1.46	4.69
Extraversion	182	3.51	0.80	1.50	5	112	3.24	0.94	1	4.88
Agreeableness	182	3.94	0.56	2.44	5	112	3.55	0.58	2	5
Conscientiousness	182	3.93	0.67	1.89	5	112	3.48	0.77	1.22	5
Neuroticism	182	2.77	0.82	1	4.88	112	3.31	0.80	1.50	4.88
Openness	182	3.83	0.63	1.70	5	112	3.76	0.64	2.20	4.90
Budgeting	192	3.27	1.18	1	5	113	3.14	1.13	1	5
Change in Plans	192	2.92	0.76	1	5	113	2.81	0.79	1	4
RCES: Parental Savings	191	4.01	1.08	1	5	113	3.97	1.04	1	5
RCES: Childhood Savings	192	3.44	1.92	1	5	113	3.74	1.04	1	5
RCES: Parental Discuss	191	2.19	1.17	1	5	112	2.30	1.24	1	5
RCES: Income (allowance)	192	3.85	1.11	1	5	113	3.87	0.97	2	5
RCES: Expenditure Intervention	190	2.80	1.26	1	5	113	2.87	1.18	1	5
RCES: Teaching Saving	192	3.37	1.25	1	5	113	3.63	1.22	1	5
RCES: Piggy Bank (age)	131	7.13	2.14	2	17	87	7.18	2.06	3	12
RCES: Piggy Bank (active use)	137	3.71	0.93	2	5	91	3.81	0.89	1	5
RCES: Piggy Bank (cover expenditures)	135	3.33	1.12	1	5	90	3.10	1.21	1	5

Note: Change Plans: Changes in expenditure plans; RCES: Retrospective Childhood Economic Socialization; Parental Savings: Parents' saving behavior during participant's childhood; Childhood Savings: Participants' saving behavior during their childhood; Parental Discuss: Parents' discussion with their child about finance; Piggy Bank (age): The age when he/she had his/her first piggy bank; Piggy Bank (active use): Active usage of piggy bank; Piggy Bank (cover expenditures): Covering expenditures with the money accumulated in the piggy bank during childhood.

3.3.2 Saving behavior

Participants' saving behavior was assessed with three questions: Saving attitude, preference for saving, and actual savings. The actual saving question was only asked if the participants stated that their income exceeded, or it was equal to their expenses during the last year. In both samples, half of the participants stated that their expenses exceeded their income. Therefore, the actual savings question was disregarded in the analyses, as it might not be a reliable dependent variable assessing

adults' savings due to missing cells. In both student and community samples, there were high correlations between participants' preference for saving and their saving attitude; $r(111) = .70, p < .001$ and $r(190) = .50, p < .001$, respectively. A composite score of perceived saving behavior was created by averaging the ratings in two questions (see Table 9).

Participants' budgeting practices were measured with (a) engagement in budgeting (e.g., to what extent they budget their expenditure) and (b) their changes in expenditure plans (e.g., to what extent they change their expenditure plans). In both samples, budgeting practices were not correlated with each other, $ps > .05$ (see Tables 10 and 11). Participants' engagement in budgeting was positively correlated with both students' and non-student adults' perceived saving behavior.³ Only in the student sample, changing the expenditure plans (e.g., buying additional items even they are not on the shopping list) negatively correlated with perceived saving behavior, $r(111) = -.21, p = .03$ (see Tables 10 and 11).

Comparing the samples, students reported higher perceived saving behavior than the non-student adults in the community sample, $t(303) = 3.12, p = .002, d = .37$ (Table 9). However, there was no difference in their budgeting practices (Table 9). Furthermore, within samples, there was no effect of gender, socio-economic status (i.e., income, education, employment status), age, and their parenting status on participants' perceived saving behavior and budgeting. Only in the student sample, female participants ($n = 88, M = 2.90, SD = .76$) reported that they made more changes in their expenditure plans than male participants ($n = 24, M = 2.42, SD = .78$), $t(110) = 2.74, p = .007, d = .62$.

³ In Pearson's correlation analyses, although there were many correlational analyses, the p-value was not corrected because these correlation matrices were created for only exploratory reasons only (please see Tables 10, 11, 12, and 13). The hypotheses were tested with regression analyses.

3.3.3 Relations between saving, future orientation, self-control, and personality

To explore the relations between self-reported saving behavior and future orientation, self-control, and personality, Pearson's Correlation tests were run for each sample (please see Table 10 for the community sample and Table 11 for the student sample). Regarding future orientation, in both samples, perceived saving behavior was correlated with future orientation positively and present orientation negatively, $ps < .05$. Similarly, self-control also positively correlated with perceived saving behavior in both samples, $ps < .05$. Unexpectedly, only conscientiousness personality trait correlated with perceived saving behavior in the expected direction, $ps < .01$. The other personality traits were not related to perceived saving behavior (see Tables 10 and 11).

Table 10. Pearson Correlation Tests Between Saving Behavior, Future Orientation, Personality, Budgeting, and Self-Control in the Community Sample

	Age (year)	1	2	3	4	5	6	7	8	9	10
1. Perceived Saving	.13										
2. PO	-.17*	-.42**									
3. FO	.10	.39**	-.58**								
4. SC	.48**	.27**	-.43**	.36**							
5. Budget	.14	.24*	-.40**	.31**	.28**						
6. Change in Expen.	-.12	-.09	.11	-.11	-.19*	-.13					
7. Extra.	.14	-.09	-.04	.09	.24**	.10	-.08				
8. Agree.	.35**	-.02	-.04	-.05	.27**	.06	-.03	.36**			
9. Cons.	.45**	.26**	-.42**	.38**	.72**	.34**	.18*	.36**	.32**		
10. Neuro.	-.10	-.01	.20**	-.09	-.33**	-.17	.02	-.38**	-.38**	-.35**	
11. Open.	.16*	.07	-.28**	.27**	.25**	.14	-.04	.35**	.11	.29**	-.15*

Note: PO: Present orientation; FO: Future orientation; SC: Self-control; Budget: Engagement in budgeting; Change in Expen.: Changes in expenditure plans; Extra: Extraversion; Agree: Agreeableness; Cons: Conscientiousness; Neuro: Neuroticism; Open: Openness to experience.

* $p < .05$. ** $p < .01$.

Table 11. Pearson Correlation Tests Between Saving Behavior, Future Orientation, Personality, Budgeting, and Self-Control in the Student Sample

	Perceived Saving	1	2	3	4	5	6	7	8	9
1. PO	-.39**									
2. FO	.35**	-.68**								
3. SC	.33**	-.55**	.54**							
4. Budget	.31**	-.15	.24*	.14						
5. Change in Expen.	-.21*	.15	-.13	-.06	.16					
6. Extra.	.01	-.01	.05	.16	-.05	-.11				
7. Agree.	.03	-.12	.23*	.24*	.03	.11	.10			
8. Cons.	.30**	-.52**	.47**	.83**	.15	.01	.25**	.16		
9. Neuro.	-.15	.27**	-.31**	-.37**	-.08	.04	-.21*	-.39**	-.28**	
10. Open.	.10	-.09	.21*	.19*	.09	-.03	.29**	-.08	.21*	-.05

Note: PO: Present orientation; FO: Future orientation; SC: Self-control; Budget: Engagement in budgeting; Change in Expen.: Changes in expenditure plans; Extra: Extraversion; Agree: Agreeableness; Cons: Conscientiousness; Neuro: Neuroticism; Open: Openness to experience.

* $p < .05$. ** $p < .01$.

3.3.4 Relations between saving and childhood economic socialization

In both student and community samples, most participants had a piggy bank during their childhood (81% and 71%, respectively). Also, the age when they had their first piggy bank was similar across the community ($M = 7.13$, $SD = 2.14$) and student samples ($M = 7.18$, $SD = 2.06$). In the community sample, 37% of adults reported an employment experience during their childhood. However, employment experience was very rare (10%) in the student sample. Neither employment experience nor the presence of piggy bank affected participants' current saving behavior in these samples.

To explore the relations between saving behavior and childhood economic socialization, Pearson's Correlation tests were run (see Table 12 for the community sample and Table 13 for the student sample). In both samples, current perceived

saving behavior was positively correlated with childhood saving behavior and their parents' saving behavior during their childhood, $ps < .05$. Moreover, active use of piggy bank (e.g., regularly saving in it) and expenditure covering with a piggy bank (e.g., spending the saved amount to buy an item) were correlated with adults' perceived saving behavior only in the community sample, $ps < .05$. In the student sample, perceived saving was correlated positively with the age when they had their first piggy bank and negatively with their allowance practices (e.g., regularly receiving allowance), $ps < .05$ (see Table 12 and Table 13).

Table 12. Pearson Correlation Tests Between Saving Behavior and Childhood Economic Socialization in the Community Sample

	Age (year)	1	2	3	4	5	6	7	8	9
1. Perceived Saving	.13									
2. RCES: Parental Savings	.13	.21*								
3. RCES: Childhood Savings	.05	.50**	.31**							
4. RCES: Parental Discuss	-.03	.09	.22*	.21**						
5. RCES: Income (allowance)	-.12	-.08	-.17*	-.04	.12					
6. RCES: Expenditure Intervention	-.11	.05	.33**	.08	.10	-.18*				
7. RCES: Teaching Saving	-.14	-.02	.45**	.12	.06	-.15*	.54**			
8. RCES: Piggy bank (age)	-.01	-.15	-.01	-.06	-.06	.04	.03	.07		
9. RCES: Piggy bank (active use)	.10	.32**	.09	.39**	.25**	.12	-.11	.05	-.17	
RCES: Piggy bank (cover expenditures)	-.10	.19*	.09	.19*	.15	.06	.13	.09	-.01	.36**

Note: RCES: Retrospective Childhood Economic Socialization; Parental Savings: Parents' saving behavior during participant's childhood; Childhood Savings: Participants' saving behavior during their childhood; Parental Discuss: Parents' discussion with their child about finance; Piggy Bank (age): The age when he/she had his/her first piggy bank; Piggy Bank (active use): Active usage of piggy bank; Piggy Bank (cover expenditures): Covering expenditures with the money accumulated in the piggy bank during childhood.

* $p < .05$, ** $p < .01$.

Table 13. Pearson Correlation Tests Between Saving Behavior and Childhood Economic Socialization in the Student Sample

	Perceived Saving	1	2	3	4	5	6	7	8
1. RCES: Parental Savings	.20*								
2. RCES: Childhood savings	.42**	.34**							
3. RCES: Parental Discuss	.05	.25**	.11						
4. RCES: Income (allowance)	-.26**	-.31**	-.16	-.01					
5. RCES: Expenditure intervention	-.09	.34**	.14	.33**	-.30**				
6. RCES: Teaching Saving	.01	.42**	.14	.33**	-.15	.47**			
7. RCES: Piggy bank (age)	.25*	.28**	.14	-.06	-.25*	-.04	.01		
8. RCES: Piggy bank (active use)	.19	.18	.38**	.21*	0.13	-.11	.12	-.06	
RCES: Piggy bank (cover expenditures)	-.03	.13	-.03	.18	0.18	.10	.22*	-.02	.18

Note: RCES: Retrospective Childhood Economic Socialization; Parental Savings: Parents' saving behavior during participant's childhood; Childhood Savings: Participants' saving behavior during their childhood; Parental Discuss: Parents' discussion with their child about finance; Piggy Bank (age): The age when he/she had his/her first piggy bank; Piggy Bank (active use): Active usage of piggy bank; Piggy Bank (cover expenditures): Covering expenditures with the money accumulated in the piggy bank during childhood.

* $p < .05$, ** $p < .01$.

As there were many correlations between perceived saving behavior and childhood economic socialization variables, a linear regression was run to test the relations. In Step 1 of the regression model, participants' demographics (age, gender, and sample status) were added. In Step 2, their childhood saving behavior, their parents' saving behavior during their childhood, piggy bank practices (age, active use, and expenditure covering), and allowance practices were added to the model. In Step 3, the interactions of these variables with the sample status were added. Model at Step 1 explained the variance in perceived saving behavior, $R^2 = .04$, $F(3, 201) = 2.72$, $p = .046$. Being a student ($\beta = .43$, $p = .01$) predicted higher perceived saving. After adding childhood economic socialization variables in the model, there was a significant increase in the variance explained, $\Delta R^2 = .25$, $F(6, 195) = 11.50$, $p < .001$.

In addition to the sample status, in Step 2, childhood saving behavior ($\beta = .32, p < .001$) and their parents' saving behavior during their childhood ($\beta = .11, p = .045$) predicted adults' perceived saving behavior. Adding interactions at the Step 3 slightly increased the variance explained, but this increase was not statistically meaningful, $\Delta R^2 = .02, F(5, 190) = 1.23, p = .30$. Overall, although piggy bank and allowance practices correlated with participants' perceived saving, they were not revealed as predictors in the model. Only childhood saving behavior and parents' saving behavior during childhood explained the variance in adulthood perceived saving.

3.3.5 Predictors of saving behavior

So far, several variables were revealed to be correlated with individuals' perceived saving behavior. In the final analysis, a linear regression was run to investigate the predictors of saving behavior in adulthood. In both samples, there were strong negative correlations between future orientation and present orientation (r s ranging from $-.58$ to $-.68$). As the hypothesis was on future orientation, only future orientation score was included in the model. Similarly, conscientiousness was highly correlated with self-control in both samples (r s ranging from $.72$ to $.83$). To avoid multicollinearity, two alternate models were tested. In the first model, self-control was added instead of conscientiousness, and in the second model, conscientiousness was added rather than self-control.

In the first model, participants' characteristics (i.e., sample status, age, and gender) were added at the first step of the model. At Step 2, adults' future orientation, self-control, and budgeting variables were added. At Step 3, economic socialization variables (i.e., childhood saving and parental saving) were added. At

Step 4, the interactions of these variables with the sample status were added due to exploratory reasons. In the alternative model, the steps were the same with one difference: Conscientiousness was added instead of self-control at Step 2 in the alternative model.

The results revealed that the first model at Step 1 meaningfully explained the variance in the adults' perceived saving behavior, $R^2 = .04$, $F(3, 281) = 3.90$, $p = .01$. Being student ($\beta = .48$, $p < .001$) and increase in age ($\beta = .01$, $p = .04$) predicted higher levels of perceived saving behavior. Adding future orientation, self-control, and budgeting at Step 2 yielded a significantly meaningful increase in the explained variance, $\Delta R^2 = .18$, $F(4, 277) = 15.95$, $p < .001$. In addition to sample status, higher scores in future orientation ($\beta = .27$, $p < .001$) and higher engagement in budgeting ($\beta = .14$, $p < .001$) predicted higher levels of perceived saving behavior (see Table 14). Adding childhood economic socialization variables increased the variance explained by the model, $\Delta R^2 = .11$, $F(2, 275) = 21.70$, $p < .001$. At Step 3, sample status ($\beta = .30$, $p = .02$), future orientation ($\beta = .16$, $p = .01$), budgeting ($\beta = .08$, $p = .04$), and childhood saving behavior ($\beta = .26$, $p < .001$) predicted perceived saving behavior in adulthood (Table 14). Adding the interactions at the final step did not yield a meaningful increase in the explained variance, $\Delta R^2 = .01$, $F(6, 269) = 1.00$, $p = .42$. Therefore, these coefficients were not discussed. In the alternative model, conscientiousness was not a significant predictor of perceived saving behavior in all steps. The other relations in the model and statistical significance of each step were remained the same.

Table 14. Predictors of Saving Behavior in Adulthood

Outcome:	Perceived Saving Behavior			
Predictors:	<i>SE(B)</i>	β	<i>p</i>	<i>R</i> ²
Step 1				.04**
Gender				
(female-male)	.12	.10	.40	
Sample Status				
(community-student)	.14	.48	< .001	
Age (years)	.01	.01	.04	
Step 2				.22**
Gender				
(female-male)	.10	.07	.49	
Sample Status				
(community-student)	.13	.38	.01	
Age (years)	.01	< .01	.71	
Future Orientation	.06	.27	< .001	
Self-Control	.09	.16	.07	
Budgeting	.04	.14	< .001	
Change in Plans	.06	-.09	.11	
Step 3				.33**
Gender				
(female-male)	.09	.05	.58	
Sample Status				
(community-student)	.12	.30	.02	
Age (years)	.01	< .01	.57	
Future Orientation	.06	.16	.01	
Self-Control	.11	.08	.19	
Budgeting	.04	.08	.04	
Change in Plans	.06	-.09	.12	
RCES: Childhood Savings	.04	.26	< .001	
RCES: Parent's Saving Behavior	.04	.03	.55	

Note: Change in Plans: Changes in expenditure plans; RCES: Retrospective Childhood Economic Socialization; Childhood Savings: Participants' saving behavior during their childhood; Parent's Saving Behavior: Parents' saving behavior during participant's childhood.

* $p < .05$. ** $p < .01$

3.4 Discussion

The study attempted to assess adults' savings with perceived saving behavior (i.e., preference to saving and saving attitude) and actual savings. Unexpectedly, almost half of the participants reported that their expenses exceeded their income. This unexpected outcome limited the extent of the findings, and the analyses were run only on participants' perceived saving behavior.

There was a sample difference in perceived saving behavior such that the students had perceived their saving behavior higher than the non-student adults in the community sample. A similar trend was also observed in the earlier studies in which young adults reported a higher tendency to save than older adults (Chamon & Prasad, 2010; Harris, Loundes, & Webster, 2002). Students may have placed more emphasis on savings, or have less expenses (e.g., no child-rearing expenses) compared to non-student adults, which may lead them to consider saving more.

The main objective of the study was to examine the psychological factors supporting saving behavior. Although there were between sample differences in saving, the psychological factors supporting saving behavior did not differ across samples. In both samples, future orientation, budgeting, and childhood economic socialization predicted participants' perceived saving behavior. These findings support the theoretical approach that foresight and planning might be key abilities facilitating saving behavior (Katona, 1975; Rabinovich & Webley, 2007; Shefrin & Thaler, 1988; Webley & Nyhus, 2013).

In terms of the link between self-control and saving behavior, the data partially supported the earlier findings (e.g., Rha et al., 2006; Strömbäck et al., 2017). Self-control was positively correlated with perceived saving behavior, but it did not predict saving in the regression model. In this study, saving behavior was assessed based on participants' self-reported engagements. During the survey, participants may have overestimated their capabilities in saving and reported higher ratings in saving questions. Future studies should examine this link with factual saving information, which may track down the impact of self-control on saving behavior better.

Literature on saving behavior documented that conscientiousness was positively, and neuroticism and extraversion were negatively correlated with saving behavior (e.g., Asebedo et al., 2019; Brandstätter, 2005; Kausel et al., 2016; Nyhus & Webley, 2001). However, in our samples, extraversion and neuroticism were unrelated to perceived saving behavior. Furthermore, although conscientiousness was positively correlated with perceived saving, it was not a significant predictor in the model. Earlier studies reporting the impact of personality on saving often measured individuals' actual savings and detailed consumption histories to assess their saving behavior (e.g., CentER Saving Survey; Nyhus & Webley, 2001). One explanation could be that personality traits may influence participants' actual savings rather than their self-reported saving behavior. Neuroticism and extraversion are linked with compulsive buying and higher levels of debt; conscientiousness is associated with better financial management (e.g., Furnham & Cheng, 2019; Mowen & Spears, 1999). Therefore, these personality traits may predict saving behavior through decreasing/or increasing the leftover discretionary income.

Childhood economic socialization is the process where children observe financial behavior, develop habits, and practice them in an environment supported by parents (Gudmunson & Danes, 2011). These saving habits were found to have lifelong influences on individuals' saving behavior (e.g., Webley & Nyhus, 2013). Similarly, in this study, many dimensions of economic socialization (e.g., active use of piggy bank) were associated with perceived saving behavior. Also, childhood saving behavior predicted participants' current perceived saving behavior, suggesting that childhood economic socialization might be a strong marker of saving behavior later in life.

There are several limitations in the adult study. First, the community sample involved participants from young adulthood to elderhood. The wide age range in the community sample may have included different sample characteristics, which might lead to different saving motivations. In this study, participants' parenting status (e.g., whether they have a child; please see Appendices C and D for all questions) was asked, and the results showed that it did not have a meaningful effect on perceived saving behavior. However, there may be other characteristics that were not controlled in this study. For example, retirement status (e.g., Hogarth, 1991; Niimi & Horioka, 2019) or marital status of participants may influence individuals' motivation to save. Future studies should collect more data on these demographics to explore and control for more variables that might influence participants' savings.

Second, although the scope of the study was to assess psychological correlates of saving, adults' knowledge and awareness about finance (i.e., financial literacy) are also important in their financial decisions. Studies with adults showed that their financial literacy levels predicted their saving behavior (e.g., Babiarz & Robb, 2014). The study did not measure financial literacy directly, but rather assessed participants' financial practices and socialization (e.g., budgeting), which actually were revealed as predictors of their perceived saving behavior. Additionally, financial literacy may also explain perceived saving behavior. For instance, in this study, students reported higher levels of perceived saving behavior than non-student adults in the community sample. Students may have had more fresh mathematical skills; or knew financial concepts better (e.g., stocks) than the community sample, which may explain their increased ratings of students on the perceived saving questions (e.g., see Christelis, Jappelli, & Padula, 2010; Lusardi & Mitchell, 2008 for similar findings). Also, financial literacy might be associated with their saving

preferences such that adults with better financial literacy may use their savings more adaptively than the others (e.g., choosing the best paper in the stock market). Future studies should assess and include financial literacy in their saving models to understand individual variance in saving behavior.

To sum up, the study revealed that although there were sample differences in terms of perception of engaging in saving behavior, the psychological factors supporting saving remained similar. Future orientation, self-control, budgeting, conscientiousness, and childhood economic socialization were correlated with adults' perceived saving behavior. However, in the final model, only future orientation, childhood saving behavior, and budgeting remained as meaningful predictors of perceived saving behavior, which may highlight the strong impacts of planning, future-thinking, and saving habits developed during childhood on saving behavior.

CHAPTER 4

GENERAL DISCUSSION

Across two studies, the saving behavior of three different samples (i.e., preschool children, college students, and non-student adults) was examined alongside several cognitive abilities, personality, and social factors to reach a better understanding of the psychological mechanism of saving behavior. Although economic accounts thought of saving as being merely about finances (Keynes, 1936; Modigliani & Brumberg, 1954), this study consistent with psychological accounts (e.g., Katona, 1975), showed that there are individual differences in saving behavior which are related to cognitive abilities, personality, and social factors.

One of the fundamental findings is that young children can engage in saving to overcome the financial scarcity that they have been facing. In Study 1, preschool children took part in a saving game in which the flow of income at the time would not be enough to meet future consumption. Therefore, they needed to engage in saving with a purposeful motive (i.e., for future consumption) and to accumulate some of their allowances for future use. The majority of children (66%) saved up enough resources compensating for their future needs. Sonuga-Barke and Webley (1993) argued that although children have no extensive knowledge about financial concepts, they are actually economic problem solvers, and they can take actions regarding the problem constructed within their social environment (e.g., bartering marbles in the playground, or negotiating with parents for the desired toy). Similarly, in this study, preschool children engaged in saving behavior to overcome a financial problem.

Saving behavior is argued to be a future-oriented skill that the ability to think about the future provides very fundamental of saving behavior (Metcalf & Atance, 2011). Supporting the claim, children's episodic foresight skills and adults' orientation to the future predicted their saving behavior in the study. The future-self continuity hypothesis claimed that individuals differ from each other in terms of their connectedness to their future self; individuals who felt similar or connected to their future selves were more likely to engage in future-oriented behavior (Ersner-Hersfield, et al., 2009). In Study 2, the link between perceived saving behavior and future orientation supported this hypothesis. However, in children's savings, the future-self continuity hypothesis has not been tested yet. As future-oriented abilities develop (e.g., episodic foresight and prospective memory), children may feel more connected to their future selves and might be able to consider a more distant future (please Mazachowsky & Mahy, 2020 for a similar discussion). In this direction, future studies should focus on the relation between future oriented cognition and saving behavior; and explore how children's saving behavior interacts with their future-oriented abilities and individual differences in their future-self continuity.

Shefrin and Thaler (1988) put forward a self-control model in which a saving decision is the result of a conflict between a *doer* (i.e., a hypothetical self who always favors immediate gratifications) and a *planner* (i.e., a hypothetical self who always considers distant outcomes). Although their account has not been fully tested, many studies including this one revealed a relation between saving and self-control (e.g., Rha et al., 2006; Strömbäck et al., 2017). However, this relation was only observed in adults. Preschool children's self-control capacities assessed with delay of gratification were unrelated to their savings. Delay of gratification may have failed to capture the multidimensional construct of self-control in childhood. Therefore, the

expected link between self-control and saving was not supported by the data. However, another possibility is that self-control may play a role in saving behavior later in development. In the act of saving, children first need to foresee future consumption and then engage in a decision-making process on what they should do (saving vs. spending). Children may fail in saving not because they could not resist currently available gratification but because they cannot foresee the future need or have a challenging time to plan saving actions and maintain the decision-making process. In our data, children's episodic foresight skills predicted a higher level of savings, and planning skills predicted actualization of saving intention. Therefore, in childhood, saving behavior may rely on more developmental gains in episodic foresight and executive function rather than delay of gratification. Delay of gratification, or self-control, might be influential in saving later especially when children become more competent in the underlying cognitive skills. Future studies should explore the link between saving and self-control with school-aged children or adolescents to understand the role of self-control in the development of saving behavior.

Saving is not a one-for-all process but a complicated one that individuals need to change their saving decisions according to their reserves and flow of income. Maturation in executive function is argued to make children more competent agents in the saving decision-making process (Friedline, 2015; Lee & Carlson, 2015). Study 1 provided evidence that children's executive function predicted their adaptive engagement in saving in which children flexibly shifted their saving decisions to reach the most optimal savings. Also, children's planning skills exclusively predicted their success at saving game. Similar findings were also documented in adult studies; adults who engaged in planning practices more (e.g., budgeting) were better at

actualizing their saving intention (e.g., Rabinovich & Webley, 2007). In this study, a direct link between engagement in budgeting and perceived saving behavior was also observed. However, the survey method adopted in Study 2 was not suitable to explore its role in the actualization of saving intention. Future studies may consider administering behavioral tasks to explore these relations in adults. Even though it is rare, there are saving games developed to assess adults' savings. In one of the methods, the college students participated in a computerized game, and they were asked to decide whether to spend or save according to the odd ratio proposed as a result of dice rolling (Anderhub, Gäuth, Mäüller, & Strobel, 2000; Brandstätter & Güth, 2000). Within this kind of game set-up, it might be plausible to track how adults take actions to realize their saving intentions, or under what conditions they shift their saving decisions to gain the maximum benefit, and further how executive function interacts with these behaviors could be explored.

In daily life, every saving decision is not motivated by a purposeful intention. People often save because they think they ought to do so (e.g., continuous saving; Wärneryd, 1995). Economic socialization might be the source of these saving habits (Gudmunson & Danes, 2011; Otto, 2009). In the study, adults' childhood saving behavior explained the variance in their current perceived saving behavior. However, a similar relation was absent in the child study. Childhood economic socialization is a long process, and preschool children are just at beginning of this process. The output of economic socialization may require many years and experiences to shape individuals' engagement in saving behavior. Therefore, economic socialization might have been only associated with the adults' saving behavior. In addition, although adults were asked to report their childhood economic socialization while thinking of their childhood between the ages of 4 to 12, parents reported their child's economic

socialization while thinking of their child's experiences who were mostly aged between 4- to 6- year-old. Another explanation might be that economic socialization during school years might be especially important for the development of saving habits. In these years, children become more independent in their decisions such as they go to school and socialize there without parental supervision, which may create a better practice area in which children carry out what they have learned during their parental economic socialization. Therefore, future studies should also include school-aged children as well to examine the process of economic socialization in different periods and understand its relationship with saving behavior.

On personality, adults' perceived saving behavior was related to their conscientiousness similar to earlier studies (Brandstätter, 2005; Letkiewicz & Fox, 2014). Also, the relation between temperament and saving was explored in Study 1, and children's saving was found to be associated with their negative affectivity. This finding was unexpected because negative affectivity is generally associated with a poor performance in future-oriented decisions (Garon & Moore, 2006). Furthermore, in the adult samples, neuroticism, which shares similar characteristics with negative affectivity, was also not related to participants' saving behavior. Future studies should explore the links between children's savings and temperament in order to replicate this finding and understand the relationship better.

The studies reported here are limited in several ways. First, in the reported studies, participants' financial savings were assessed as a way of supporting their personal needs in the future. Although it is a traditional way of defining saving (e.g., Katona, 1949, 1970; Sonuga-Barke & Webley, 1993; Mazachowsky & Mahy, 2020), saving does not always have to be financial or promise a personal benefit. For example, people often engage in environmentally responsible behaviors; they avoid

using non-recyclable products and try to save energy to sustain the ecological balance (e.g., De Young, 2000; Fujii, 2006). Although financial motivations were again an important predictor of especially household energy-saving behaviors, altruistic reasons were also among the factors promoting pro-environmental behaviors (De Young, 2000; Martinsson, Lundqvist, & Sundstrom, 2011). Future studies should examine the emergence of pro-environmental behaviors in children and compare it with their money-saving behavior in order to track different kinds of saving behavior in children.

Second, online meetings were held with children, and a remote survey setting was used with adults due to the pandemic. For the child study, although pre-experiment instructions strictly stated that possible distractors (e.g., toys) should be removed and silence is important for children's attention during the experiment, the experimenter had no direct control over the environment. Similar concerns applied for adult study in which the experimenter again had no control over the environment where the participants attended the study. This lack of control increased the noise in the data, especially in the delay of gratification task in which children needed to wait for a while.

There are other individual differences that might be linked with saving behavior. For instance, individuals also differ from each other in terms of their affective responses regarding spending (Rick, Cryder, & Loewenstein, 2008). Some people (i.e., *tightwads*) perceive spending as a painful process and hesitate to spend; while others (i.e., *spendthrifts*) do not experience spending as painful as tightwads and engage in spending behavior more frequently than tightwads (Raghubir & Srivastava, 2009; Rick et al., 2008). Tightwad-spendthrift tendencies of individuals were also present in childhood; and 5- to 10-year-old children's tightwad-spendthrift

tendencies were related to their spending preferences (Smith, Echelbarger, Gelman, Rick, 2017). Future studies should include this tendency of individuals to explain the variance in saving behavior.

Overall, the studies revealed that there are individual differences in saving behavior that can be explained by psychological variables. During preschool years, cognitive abilities may explain children's engagement in savings. In adulthood, childhood economic socialization seems to gain more importance, and adults' self-reported saving behavior strongly depends on their orientation to the future, childhood saving behavior, and budgeting practices.

APPENDIX A

ETHICS COMMITTEE APPROVAL

Evrak Tarih ve Sayısı: 26/06/2020-69

T.C.
BOĞAZİÇİ ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER YÜKSEK LİSANS VE DOKTORA TEZLERİ ETİK İNCELEME
KOMİSYONU
TOPLANTI TUTANAĞI

Toplantı Sayısı : 4
Toplantı Tarihi : 11/05/2020
Toplantı Saati : 14:00
Toplantı Yeri : Zoom Sanal Toplantı
Bulunanlar : Prof. Dr. Feyza Çorapçı, Dr. Öğr. Üyesi Yasemin Sohtorik İlkmen, Prof. Dr. Özlem Hesapçı
Karaca, Doç. Dr. Ebru Kaya, Prof. Dr. Fatma Nevra Seggie
Bulunmayanlar :

Ege Kamber
Psikoloji

Sayın Araştırmacı,

"Erken Çocukluk ve Yetişkinlikte Tutumluluk Davranışının Bilişsel Beceri ve Sosyal Faktörler ile İlişkisi" başlıklı projeniz ile ilgili olarak yaptığımız SBB-EAK 2020/31 sayılı başvuru komisyonumuz tarafından 11 Mayıs 2020 tarihli toplantıda incelenmiş ve uygun bulunmuştur.

Bu karar tüm üyelerin toplantıya çevrimiçi olarak katılımı ve oybirliği ile alınmıştır. COVID-19 önlemleri kapsamında kurul üyelerinden ıslak imza alınamadığı için bu onam mektubu üye ve raportör olarak Fatma Nevra Seggie tarafından bütün üyeler adına e-imzalanmıştır. Saygılarımızla, bilgilerinizi rica ederiz.

Prof. Dr. Fatma Nevra SEGGİE
ÜYE

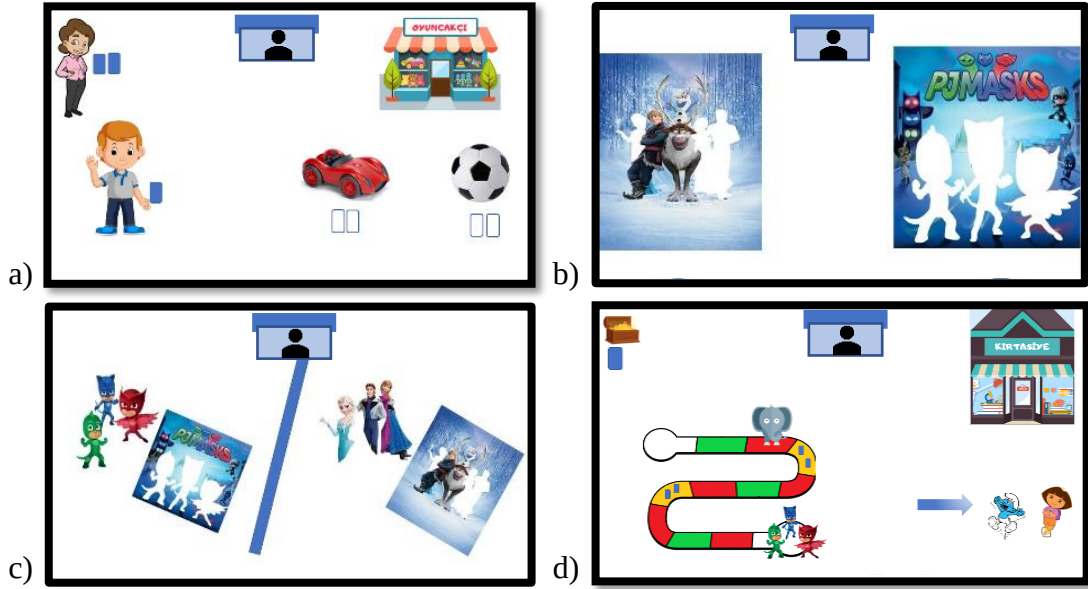
e-imzalıdır
Prof. Dr. Fatma Nevra SEGGİE
Raportör

SOBETİK 4 11/05/2020

Bu belge 5070 sayılı Elektronik İmza Kanununun 5. Maddesi gereğince güvenli elektronik imza ile imzalanmıştır.

APPENDIX B

SAVING GAME



Demonstration of the protocol of Saving Game: a) Warm-up trials in which children practiced online transaction, b) Poster selection in which children chose a poster to save for c) The introduction of the necessary stickers that children need to buy at the end of the game to complete their posters, and d) A scene from the gameplay. The elephant represented the location of children on the board game. In the safe, children's tokens were stored. On the right side of the screen, photographs of locations and small treats (if provided) appeared.

APPENDIX C

SAVING QUESTIONNAIRE

Section 1: Demographics

1) Date of birth: __ / __ / __ (DD/MM/YY)

2) Gender: ☐ Female ☐ Male ☐ Other

3) Are you a student? ☐ Yes ☐ No

3.1) Education status: _____

Elementary or secondary school (distant school) student	High school (distant school) student	High school (formal) student
College (distant school) student	College (formal) student	Graduate (e.g., M.A or Ph.D.) student
Other (please specify: _____)		

3.2) Do you receive any scholarships or loans from any institutions (e.g., Higher Education Student Loan and Housing Institution)? ☐ Yes ☐ No

(3.1 and 3.2 only appeared if the participant was a student.)

4) Education status: (this question only appeared if the participant was not a student.)

Illiterate	Literate, or did not finish elementary school	Graduated from elementary school
Did not finish secondary school	Graduated from secondary school	Did not finish high school
Graduated from high school	Graduated from a two-year school (e.g., a higher education institution)	Did not finish college
Graduated from college	Completed an Advanced Professional degree (e.g., M.A or Ph.D.)	

5) Are you currently employed?

☐ Unemployed ☐ Employed, part-time ☐ Employed, full-time

6) Occupation: _____

7) Do you have a child? ☐ Yes ☐ No

7.1) If yes, do you have a child between 4- to 6-year-old? ☐ Yes ☐ No

Section 1.1: Child Demographics

(This section only appeared if the participants stated yes in Questions 7.1.)

Please complete the following questions considering your 4- to 6-year-old child.

1) Your relationship to your child: ☐ Mother ☐ Father ☐ Other (please specify: ____)

2) Child's date of birth: ____ / ____ / ____ (DD/MM/YY)

3) Sex: ☐ Girl ☐ Boy

4) Number of siblings: ☐ 0 ☐ 1 ☐ 2 ☐ 3 or more

Sibling 1: Date of birth: _____ Sex: _____

Sibling 2: Date of birth: _____ Sex: _____

Sibling 3: Date of birth: _____ Sex: _____

5) Does your child have a diagnosed developmental problem (e.g., autism spectrum disorder, down syndrome, attention deficit disorder, learning disability, or hyperactivity)? ☐ Yes (please explain: _____) ☐ No

6) Is your child enrolled in any school/preschool institution? (Please specify the date when your child was enrolled) ☐ Yes, school (____) ☐ Yes, preschool (____) ☐ No

6.1) If yes, is the school/preschool institution part-time or full-time? (Please specify the average hours per week he/she spends in school)

☐ Full-time (____) ☐ Part-time (____)

7) Does your child have a professional caretaker (e.g., nanny)? (If yes, please specify the average hours he/she spends with the professional caretaker per week)

☐ Yes (____) ☐ No

8) Are there any other parents? ☐ Yes ☐ No

Section 1.2: Parent 2 Demographics

(This section only appeared if the participant reported there has been another parent.)

1) Parent 2's relationship to the child: ☐ Mother ☐ Father ☐ Other (_____)

2) Parent 2's date of birth: __ / __ / ____ (DD/MM/YYYY)

3) Parent 2's education level:

Illiterate	Literate, or did not finish elementary school	Graduated from elementary school
Did not finish secondary school	Graduated from secondary school	Did not finish high school
Graduated from high school	Graduated from a two-year school (e.g., a higher education institution)	Did not finish college
Graduated from college	Completed an Advanced Professional degree (e.g., M.A or Ph.D.)	

4) Is Parent 2 currently employed?

☐ Unemployed ☐ Employed, part-time ☐ Employed, full-time

5) Parent 2's occupation: _____

Section 1.3: Income Section

1) Monthly total income of households (including the income of other households):

Less than 2000 TL per month	
Between 2001 – 4000 TL per month	
Between 4001 – 6000 TL per month	
Between 6001 – 8000 TL per month	
Between 8001 – 10000 TL per month	
Between 10001 – 12000 TL per month	
More than 12000 TL per month	

2) Think of this ladder as representing where people stand in your city. At the top of the ladder, people who have the highest income, the most education, and the most respected jobs stand. The bottom of the ladder stands for the people who have the least income, the worst education, and the least respected jobs. Moving higher up on this ladder, you get closer to the people at the top of the ladder, and moving down on the ladder, you get closer to the people at the bottom of the ladder. Where would you consider yourself in the ladder? Please choose the step where you stand, considering other people in your city?



Section 2: Saving Behavior in Adulthood

In the following pages, you will read questions about your daily expenditure experiences. Please read each statement and indicate whether the statements define you on the scale provided below.

1) Saving behavior is the postponement of some of the current reserves for future use. Some people save in saving accounts, under pillows, retirement funds, or investment accounts (e.g., stocks) to have a reserve to consume it in the future, whereas others prefer to spend all their income. Please imagine that you have a disposable income after all your expenses (e.g., rent). What would you do with that amount? (Preference for saving question)

1 (spend all) 2 3 4 5 (save all)

2) During last year, your fundamental household expenses such as rent or food:

(Actual savings question 1)

A) exceeded your total household income

B) was equal to your total household income

C) was less than your total household income

3) Think of your finance during last year, what percentage of your income did you save? ____ (Actual savings question 2 appeared on the screen only if participants chose B or C in the previous question.)

4) Do you consider yourself a saver? (Saving attitude question)

1 (never) 2 3 4 5 (always)

5) Do you engage in budgeting practices such as monthly income and expense sheet?

(Engagement in budgeting question)

1 (never) 2 3 4 5 (always)

6) Do you change your budget plan along the way? (Changes in budget plans question)

1 (never) 2 3 4 5 (always)

Section 3: Retrospective Childhood Economic Socialization

Please think of your childhood between the age of 4 and 12 while rating the statements below.

1) During your childhood, do you consider your parents as savers? (Parents' saving behavior question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

2) During your childhood, have your parents argued with you about financial decisions? (Parental discuss question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

3) During your childhood, have you received allowances from your parents or other relatives? (Income question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

4) During your childhood, have your parents intervened in your expenditures? (Parental expenditure intervention question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

5) During your childhood, have your parents given you advises about being a saver? (Teaching saving question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

6) During your childhood, have you had a piggy bank (or money box)? (Piggy bank presence question) ☐ Yes ☐ No

7) If yes, how old were you when you had your first piggy bank (or money box): ____ (Piggy bank age question)

8) Have you regularly saved in your piggy bank (or money box)? (Piggy bank active use question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

9) Have you ever used the amount you saved in your piggy bank to buy an item you have planned to buy (e.g., buying a toy, or contributing with your savings for the bike you would like to buy)? (Piggy bank expenditure covering question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

10) Do you consider yourself a saver during your childhood? (Childhood saving behavior question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

11) In a period before the age of 18, have you regularly worked and earned money (e.g., summer jobs)? (Childhood employment question) ☐ Yes ☐ No

Section 4: Children's Economic Socialization

(This section appeared only if the participants reported that he/she had a 4- to 6-year-old child.)

In the following section, you will read statements about your 4- to 6-year-old child (the one you thought about while filling out the child demographics). Please rate each statement how it defines your child. If a statement does not apply to your child, then please choose the "does not apply" option.

1) Do you change your budget plans while you are with your child (e.g., purchasing toys even they are not on your list)? (Parental changes in plans question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

2) Do you give allowances to your child? (Allowance question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

3) Does your children receive gift money for special days (e.g., birthday)? (Gift money question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

4) Do you intervene in your child's expenditures? (Parental expenditure intervention question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

5) Do you give your child advises about saving on resources? (Advising saving now question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

6) Do you advise your child about being careful about his/her expenses in the future (e.g., when he/she becomes an adult)? (Advising saving in future question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

7) Do you engage in saving while you are with your child to be a role model? (Role model question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

8) Do you advise your child that the budget executions should be done within a plan (e.g., highlighting the importance of preparing a shopping list before shopping)? (Advising planned expenditure question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

9) Does your child have a piggy bank (or money box)? (Piggy bank presence question) ☐ Yes ☐ No

10) If yes, how old was he/she when he/she had his/her first piggy bank (money box):_____ (Piggy bank age question)

11) Does your child regularly save in his/her piggy bank (or money box)? (Piggy bank active use question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

12) Does your child use the amount he/she saved in the piggy bank (or moneybox) to buy an item he/she has planned to buy (e.g., buying a toy, or contributing with his/her savings in the piggy bank to the fund to buy a bike)? (Piggy bank expenditure covering question)

1 (never) 2 3 4 5 (always*regularly) ☐ (does not apply)

13) Do you discuss with your child the differences between needs (e.g., cardboard for homework) and desires (e.g., fancy stickers) (e.g., first needs, then desires should be compensated)? (Distinguishing needs and desires question)

1 (never) 2 3 4 5 (always) ☐ (does not apply)

APPENDIX D

SAVING QUESTIONNAIRE (ORIGINAL TURKISH VERSION)

Bölüm 1: Demografik Bilgiler

1) Doğum Tarihiniz: __ / __ / __ (GG/AA/ YYYY)

2) Cinsiyetiniz: ☐ Kadın ☐ Erkek ☐ Diğer

3) Öğrenci misiniz? ☐ Evet ☐ Hayır

3.1) Eğitim seviyeniz:

İlkokul veya ortaokul (açık öğretim) öğrencisi	Lise (açık öğretim) öğrencisi	Lise (örgün) öğrencisi
Üniversite (açık öğretim) öğrencisi	Üniversite (örgün) öğrencisi	Uzmanlık (yüksek lisans veya doktora gibi) öğrencisiyim
Diğer (belirtiniz:)		

3.2) Herhangi bir vakıf, kurum veya kuruluştan (örn. KYK) burs veya geri ödemeli kredi alıyor musunuz? ☐ Evet ☐ Hayır

(3.1 ve 3.2 sadece öğrenci olduğunu belirten katılımcılara gösterilmiştir.)

4) Eğitim seviyeniz:

Okuma yazma bilmiyor	Okuma yazma biliyor, veya ilkokul terk	İlkokul mezunu
Ortaokul terk	Ortaokul mezunu	Lise terk
Lise mezunu	Yüksek okul mezunu (iki yıllık)	Üniversite terk
Üniversite mezunu	Uzmanlık derecesi var (yüksek lisans, doktora veya tıpta uzmanlık gibi)	

5) Şu anda çalışıyor musunuz? ☐ Hayır ☐ Evet, yarı zamanlı ☐ Evet, tam zamanlı

6) Mesleğiniz: _____

7) Çocuğunuz var mı: ☐ Evet ☐ Hayır

7.1) Eğer varsa, çocuklarınızdan herhangi biri 4-6 yaş arasında mı? ☐ Evet ☐ Hayır

Bölüm 1.1: Çocuk Demografik Bilgileri

(bu bölüm katılımcı 7.1'e evet dediyse gösterildi.)

Lütfen aşağıdaki soruları 4-6 yaşındaki çocuğunuzu düşünerek doldurunuz.

1) Çocuk ile yakınlığınız : ☐ Anne ☐ Baba ☐ Diğer (lütfen belirtiniz: _____)

2) Çocuğun doğum tarihi: __ / __ / __ (GG/AA/YYYY)

3) Cinsiyeti: K / E

4) Kardeş sayısı: ☐ 0 ☐ 1 ☐ 2 ☐ 3 veya üstü

Kardeş 1: Doğum tarihi: _____ Cinsiyet: _____

Kardeş 2: Doğum tarihi: _____ Cinsiyet: _____

Kardeş 3: Doğum tarihi: _____ Cinsiyet: _____

5) Çocuğunuzda tanısı konmuş herhangi bir gelişimsel sorun var mı (Ör. Otizm, Down sendromu-mongolizm, dikkat eksikliği, öğrenme güçlüğü, hiperaktivite)?

☐ Evet (lütfen açıklayınız: _____) ☐ Hayır

6) Çocuğunuz okula veya anaokuluna/yuvaya gidiyor mu? (lütfen ne zaman başladığını seçtiğiniz yanıtın altındaki boşlukta belirtiniz.)

☐ Evet, okula gidiyor (_____) ☐ Evet, anaokuluna gidiyor (_____) ☐ Hayır

6.1) Okulu/anaokulu tam zamanlı veya yarı zamanlı mı? (lütfen okulda geçirdiği haftalık ortalama saati seçtiğiniz yanıtın altındaki boşlukta belirtiniz.)

☐ Tam zamanlı (_____) ☐ Yarı zamanlı (_____)

7) Çocuğunuzun bakıcısı var mı? (var ise haftada ortalama kaç saatini bakıcıyla geçirdiğini yanıtın altındaki boşlukta belirtiniz) ☐ Evet (_____) ☐ Hayır

8) Çocuğun bakımını üstlenen başka bir ebeveyn var mı? ☐ Evet ☐ Hayır

Bölüm 1.2: Diğer Ebeveyn Demografik

(Bu kısım katılımcı 8. soruda bir başka ebeveyn var dediyse gösterildi.)

1) Ebeveyn 2'nin yakınlığı: ☐ Anne ☐ Baba ☐ Diğer (_____)

2) Ebeveyn 2'nin doğum Tarihi: __/__/____ (GG/AA/YYYY)

3) Ebeveyn 2 eğitimi:

Okuma yazma bilmiyor	Okuma yazma biliyor, veya ilkokul terk	İlkokul mezunu
Ortaokul terk	Ortaokul mezunu	Lise terk
Lise mezunu	Yüksek okul mezunu (iki yıllık)	Üniversite terk
Üniversite mezunu	Uzmanlık derecesi var (yüksek lisans, doktora veya tıpta uzmanlık gibi)	

4) Ebeveyn 2 şu anda çalışıyor mu? ☐ Hayır ☐ Evet yarı zamanlı ☐ Evet tam zamanlı

5) Mesleği: _____

Bölüm 1.3: Gelir düzeyi bölümü

1) Evin toplam gelir düzeyi (evde sürekli yaşayan tüm bireylerin toplam kazancı):

Ayda 2000 TL'nin altında	
Ayda 2001 –4000 TL	
Ayda 4001 – 6000 TL	
Ayda 6001 – 8000 TL	
Ayda 8001 – 10000 TL	
Ayda 10001 – 12000 TL	
Ayda 12000 TL'nin üzerinde	

2) Lütfen şekilde gördüğünüz merdivenin sizin şehrinizde yaşayan insanların sosyo-ekonomik seviyesini yansıttığını hayal edin. Merdivenin en üst basamağında en zengin, en eğitilmiş ve en prestijli işlere sahip insanların, en altında ise en az paraya sahip, en eğitimsiz ve en az prestijli işlere sahip insanların bulunduğunu varsayın. Yukarı doğru çıktıkça en tepedeki insanlara daha çok yaklaştığınızı ve aşağıya doğru indikçe en alttaki insanlara daha çok yaklaştığınızı düşünün. Bunları göz önüne aldığınızda sizce siz bu merdivenin neresindesiniz? Lütfen hayatınızın şu andaki evresinde şehrinizde yaşayan diğer insanlara kıyasla nerede olduğunuzu gösteren basamağı seçiniz.



Bölüm 2: Yetişkinlikte Tutumluluk

Aşağıda sizin gündelik harcama deneyimleriniz ile ilgili çeşitli sorular göreceksiniz. Sizden, her bir sorunun sizi ne kadar iyi tanımladığını cevap ölçeklerini kullanarak belirtmenizi istiyoruz.

1) Birikim yapmak veya tutumlu davranmak eldeki kaynakların gelecekte kullanmak için kenara ayrılmasıdır. Kimi insanlar örneğin, tasarruf hesaplarında, yastık altlarında, emeklilik fonlarında, veya yatırımlar ile (örn. borsa kağıdı) gelirlerinin bir kısmını gelecekte kullanmak üzere ayırırlar. Kimileri ise ellerine geçen gelirlerinin hepsini harcamayı tercih ederler. Lütfen, elinizde tüm giderlerinizi (örn. kira) karşıladıktan sonra bir miktar para arttığını düşünün ve bu para ile ne yapacağınızı belirtiniz. (Birikimi tercih etme sorusu)

1 (hepsini harcarım) 2 3 4 5 (hepsini biriktirim)

2) Geçtiğimiz bir yılda, temel hane halkı harcamaları (örn. kira, faturalar): (Gerçek birikim sorusu 1)

A) sizin (hane halkının toplam) gelirinizi aştı.

B) sizin (hane halkının toplam) geliriniz kadardı.

C) sizin (hane halkının toplam) gelirinden azdı.

3) Geçtiğimiz bir yılı düşündüğünüzde, temel harcamalarınızdan sonra kalan gelirinizin yüzde kaçını biriktirdiniz? _____ (Gerçek birikim sorusu 2; bir önceki soruda soruda B veya C işaretleyenlere soruldu.)

4) Kendinizi tutumlu olarak değerlendirir misiniz? (Tutumluluk tutumu sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman)

5) Parasal harcama planı yapar mısınız? (Ör. Aylık gelir ve gider tablosu gibi)

(Harcama planı yapma sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman)

6) Parasal harcama planlarınızda değişiklik yapar mısınız? (Harcama planını değiştirme sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman)

Bölüm 3: Retrospektif Ekonomik Sosyalizasyon

Lütfen aşağıdaki soruları yanıtlarken 4-12 yaş arası çocukluk döneminizi düşünün.

1) Çocukluk çağınızı düşündüğünüzde, ailenizi tutumlu olarak değerlendirir misiniz?

(Ebeveynlerin tutumluluğu sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

2) Çocukluk çağınızı düşündüğünüzde, aileniz sizinle finansal kararlar hakkında tartışır mıydı? (Ebeveynler ile tartışma sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

3) Çocukken, aileniz veya başka akrabalarınızdan cep harçlığı alır mıydınız?

(Gelir sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

4) Çocukken, aileniz paranızı nasıl harcamanız gerektiğine karar verir miydi?

(Ebeveynlerin harcamalara müdahalesi sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

5) Aileniz size tutumlu davranmanız konusunda uyarılarda bulunur muydu?

(Tutumluluğu öğretme sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

6) Çocukken kumbaranız var mıydı? (Kumbara varlığı sorusu) ☐ Evet ☐ Hayır

7) Evet ise ilk kumbaranızı aldığınızda kaç yaşındaydınız:____ (Kumbara yaş sorusu)

8) Kumbaranızda düzenli birikim yapar mıydınız? (Kumbara kullanım sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

9) Kumbaranızdaki birikimlerinizi almayı planladığınız bir ürün için mi

kullanırdınız? (örn. birikiminiz ile bisiklet harcamasına katkıda bulunmak veya istediğiniz bir oyuncak almak) (Kumbara ile harcama yapma sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

10) Çocukluk çağınızı düşündüğünüzde, kendinizi tutumlu olarak değerlendirir misiniz? (Çocukluktaki tutumluluk sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

11) 18 yaşından önce, düzenli olarak çalışarak para kazandığınız bir dönem oldu mu (örn. yaz tatili)? (Çocukluk çalışma sorusu) ☐ Evet ☐ Hayır

Bölüm 4: Çocuğun Ekonomik Sosyalleşmesi

(bu bölüm katılımcı 4-6 yaş arasında çocuğu olduğunu belirttiyse gösterilmiş)

Lütfen aşağıdaki soruları demografik formda bilgilerini verdiğiniz 4-6 yaşındaki çocuğunuzu düşünerek cevap ölçeğinde uygun gelen numarayı işaretleyerek cevaplandırınız. Sorunun çocuğunuza uygun olmadığını düşünüyorsanız lütfen "Uygun değil" seçeneğini işaretleyiniz.

1) Çocuğunuzun dahil olduğu harcama planlarında değişiklik yapar mısınız? (Ör. Harcama planı içinde olmamasına rağmen ısrarla dayalı oyuncak ya da video oyunu alımı gibi) (Ebeveynlerin harcama planını değiştirmesi sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

2) Çocuğunuza cep harçlığı veriyor musunuz? (Harçlık sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

3)Çocuğunuza özel günlerde (Ör. Bayram veya doğum günü gibi) cep harçlığı veriliyor mu? (Hediye parası sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

4) Çocuğunuzun parasını nasıl harcaması gerektiğine karar verir misiniz?

(Ebeveynlerin harcamalara müdahalesi sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

5) Çocuğunuza tutumlu davranması konusunda uyarılarda bulunur musunuz? (Şimdi tutumluluğu tavsiye etme sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

6) Çocuğunuza büyüyünce yapacağı harcamaları konusunda dikkatli olmasına dair uyarılarda bulunur musunuz? (Gelecekte tutumluluğu tavsiye etme sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

7) Çocuğunuzla birlikteyken tutumlu davranarak çocuğunuza bu konuda örnek olmaya çalışır mısınız? (Rol model sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

8) Çocuğunuza harcamaların planlı yapılması konusunda uyarılarda bulunur musunuz? (Ör. Market/Kırtasiye alışverişi öncesinde alınacaklar listesi oluşturmanın önemini vurgulamak gibi) (Planlı harcamayı tavsiye etme sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

9) Çocuğunuzun birikim yapması için kumbarası var mı? (Kumbara varlığı sorusu)

☐ Evet ☐ Hayır

10) Evet ise ilk kumbarasını aldığınızda çocuğunuz kaç yaşındaydı: __ (Kumbara yaş sorusu)

11) Çocuğunuz kumbarasında düzenli birikim yapar mı? (Kumbara kullanım sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

12) Çocuğunuz kumbarasındaki birikimlerini almayı planladığı bir ürün için mi kullanır? (örn. birikimi ile bisiklet harcamasına katkıda bulunmak veya istediği bir oyuncak almak) (Kumbara ile harcama yapma sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman*düzenli) ☐ (uygun değil)

12) Çocuğunuzla ihtiyaçların (Ör. El işi ödevi için karton) ve isteklerin (Ör. Sevdiği çıkartmalar) birbirinden farklı olduğu konusunda konuşur musunuz? (Ör. Önce ihtiyaçların daha sonra isteklerin karşılanması gerektiğini hatırlatırım.)

(İstek ve ihtiyaçları ayırma sorusu)

1 (hiçbir zaman) 2 3 4 5 (her zaman) ☐ (uygun değil)

REFERENCES

- Ainslie, G. (1975). Specious reward: A behavioral theory of impulsiveness and impulse control. *Psychological Bulletin*, 82(4), 463–496.
doi:10.1037/h0076860
- Akın Sarı, B., İşeri, E., Yalçın, Ö., Akın Aslan, A., & Şener, Ş. (2012). Reliability study of Turkish Version of Children's Behavior Questionnaire Short Form and a validity prestudy. *Turkish Journal of Clinical Psychiatry*, 15(3), 135-143. Retrieved from <https://klinikpsikiyatri.org>
- Anderhub, V., Gäuth, W., Müller, W., & Strobel, M. (2000). An experimental analysis of intertemporal allocation behavior. *Experimental Economics*, 3(2), 137-152. doi:10.1023/A:1026589319018
- Asebedo, S. D., Wilmarth, M. J., Seay, M. C., Archuleta, K., Brase, G. L., & MacDonald, M. (2019). Personality and saving behavior among older adults. *Journal of Consumer Affairs*, 53(2), 488-519. doi:10.1111/joca.12199
- Atance, C. M. (2008). Future thinking in young children. *Current Directions in Psychological Science*, 17(4), 295-298.
doi:10.1111/j.1467-8721.2008.00593.x
- Atance, C. M., Metcalf, J. L., & Thiessen, A. J. (2017). How can we help children save? Tell them they can (if they want to). *Cognitive Development*, 43, 67-79.
doi:10.1016/j.cogdev.2017.02.009
- Atance, C. M., & Meltzoff, A. N. (2005). My future self: Young children's ability to anticipate and explain future states. *Cognitive Development*, 20(3), 341-361.
doi:10.1016/j.cogdev.2005.05.001
- Atance, C. M., & O'Neill, D. K. (2001). Episodic future thinking. *Trends in Cognitive Sciences*, 5(12), 533-539. doi:10.1016/S1364-6613(00)01804-0
- Babiarz, P., & Robb, C. A. (2014). Financial literacy and emergency saving. *Journal of Family and Economic Issues*, 35(1), 40-50.
doi:10.1007/s10834-013-9369-9
- Barragan-Jason, G., Atance, C., Kopp, L., & Hopfensitz, A. (2018). Two facets of patience in young children: Waiting with and without an explicit reward. *Journal of Experimental Child Psychology*, 171, 14-30.
doi:10.1016/j.jecp.2018.01.018
- Benet-Martinez, V. & John, O. P. (1998). Los cinco grandes across cultures and ethnic groups: Multitrait multimethod analyses of the big five in Spanish and English. *Journal of Personality and Social Psychology*, 75(3), 729-750.
doi:10.1037//0022-3514.75.3.729

- Berument, S. K., & Güven, A. G. (2013). Turkish Expressive and Receptive Language Test: I. standardization, reliability and validity study of the Receptive Vocabulary Sub-Scale. *Turkish Journal of Psychiatry*, 24(3), 192-201. Retrieved from <http://www.turkpsikiyatri.com>
- Bélangier, M. J., Atance, C. M., Varghese, A. L., Nguyen, V., & Vendetti, C. (2014). What will I like best when I'm all grown up? Preschoolers' understanding of future preferences. *Child Development*, 85(6), 2419-2431. doi:10.1111/cdev.12282
- Borden, L. M., Lee, S. A., Serido, J., & Collins, D. (2008). Changing college students' financial knowledge, attitudes, and behavior through seminar participation. *Journal of Family and Economic Issues*, 29(1), 23-40. doi:10.1007/s10834-007-9087-2
- Branch, J. G., & Zickar, M. J. (2021). Mental time travel into the episodic future, episodic past, and episodic counterfactual past in everyday life. *Applied Cognitive Psychology*, 35(1), 293-299. doi:10.1002/acp.3765
- Brandstätter, H. (2005). The personality roots of saving: Uncovered from German and Dutch Surveys. In K. G. Grunert, & J. Thøgersen (Eds.), *Consumers, policy and the environment a tribute to Folke Ölander* (pp. 65-87). Boston, MA: Springer. doi:10.1007/0-387-25004-2_4
- Brandstätter, H., & Güth, W. (2000). A psychological approach to individual differences in intertemporal consumption patterns. *Journal of Economic Psychology*, 21(5), 465-479. doi:10.1016/S0167-4870(00)00014-3
- Buheji, M., da Costa Cunha, K., Beka, G., Mavric, B., De Souza, Y. L., da Costa Silva, S. S., ...Yein, T. C. (2020). The extent of covid-19 pandemic socio-economic impact on global poverty. a global integrative multidisciplinary review. *American Journal of Economics*, 10(4), 213-224. doi:10.5923/j.economics.20201004.02
- Canova, L., & Manganello Rattazzi, A. M. (2004, July). *Personality, past behaviour and saving intention: A test of an extended model of the theory of planned behaviour*. Paper presented at SABE/IAREP conference proceedings, Philadelphia. Retrieved from <https://www.researchgate.net/>
- Canova, L., Rattazzi, A. M. M., & Webley, P. (2005). The hierarchical structure of saving motives. *Journal of Economic Psychology*, 26(1), 21-34. doi:10.1016/j.joep.2003.08.007
- Carlson, S. M., Moses, L. J., & Claxton, L. J. (2004). Individual differences in executive functioning and theory of mind: An investigation of inhibitory control and planning ability. *Journal of Experimental Child Psychology*, 87(4), 299-319. doi:10.1016/j.jecp.2004.01.002
- Carlson, S. M., Shoda, Y., Ayduk, O., Aber, L., Schaefer, C., Sethi, A., ... Mischel, W. (2018). Cohort effects in children's delay of gratification. *Developmental Psychology*, 54(8), 1395-1407. doi:10.1037/dev0000533

- Carpenter, R., & Alloway, T. (2019). Computer versus paper-based testing: Are they equivalent when it comes to working memory?. *Journal of Psychoeducational Assessment*, 37(3), 382-394. doi:10.1177/0734282918761496
- Chamon, M., & Prasad, E. (2010). Why are saving rates of urban households in China rising?. *American Economic Journal: Macroeconomics*, 2(1), 93-130. doi:10.1257/mac.2.1.93
- Christelis, D., Jappelli, T., & Padula, M. (2010). Cognitive abilities and portfolio choice. *European Economic Review*, 54(1), 18-38. doi:10.1016/j.euroecorev.2009.04.001
- Cinan, S., & Doğan, A. (2013). Working memory, mental prospection, time orientation, and cognitive insight. *Journal of Individual Differences*, 34(3), 159-169. doi:10.1027/1614-0001/a000111
- De Young, R. (2000). Expanding and evaluating motives for environmentally responsible behavior. *Journal of Social Issues*, 56(3), 509-526. doi:10.1111/0022-4537.00181
- D'Argembeau, A., Renaud, O., & Van der Linden, M. (2011). Frequency, characteristics and functions of future-oriented thoughts in daily life. *Applied Cognitive Psychology*, 25(1), 96-103. doi:10.1002/acp.1647
- Diamond, A. (2013). Executive functions. *Annual Review of Psychology*, 64, 135-168. doi:10.1146/annurev-psych-113011-143750
- Doebel, S., & Zelazo, P. D. (2015). A meta-analysis of the Dimensional Change Card Sort: Implications for developmental theories and the measurement of executive function in children. *Developmental Review*, 38, 241-268. doi:10.1016/j.dr.2015.09.001
- Donnelly, G., Iyer, R., & Howell, R. T. (2012). The Big Five personality traits, material values, and financial well-being of self-described money managers. *Journal of Economic Psychology*, 33(6), 1129-1142. doi:10.1016/j.joep.2012.08.001
- Duckworth, A. L., & Kern, M. L. (2011). A meta-analysis of the convergent validity of self-control measures. *Journal of Research in Personality*, 45(3), 259-268. doi:10.1016/j.jrp.2011.02.004
- Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. A. (2011). Deliberate practice spells success: Why grittier competitors triumph at the National Spelling Bee. *Social Psychological and Personality Science*, 2(2), 174-181. doi:10.1177/1948550610385872
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087-1101. doi:10.1037/0022-3514.92.6.1087

- Duckworth, A. L., Taxer, J. L., Eskreis-Winkler, L., Galla, B. M., & Gross, J. J. (2019). Self-control and academic achievement. *Annual Review of Psychology*, 70, 373-399. doi:10.1146/annurev-psych-010418-103230
- Duckworth, A., & Weir, D. (2011, December). *Personality and response to the financial crisis* (Working Paper No. UM11-09). Michigan, MI: Michigan Retirement Research Center. doi:10.2139/ssrn.2006595
- Elliot, W., Webley, P., & Friedline, T. (2011). *Two accounts for why adolescent savings is predictive of young adult savings: An Economic socialization perspective and an institutional perspective* (Working Paper No. 11-34). St. Louis, MO: Center for Social Development, Washington University of St. Louis. Retrieved from https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1445&context=csd_research
- Einstein, G. O., & McDaniel, M. A. (1990). Normal aging and prospective memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 16(4), 717-726. doi:10.1037/0278-7393.16.4.717
- Ersner-Hershfield, H. E. (2011). Future self-continuity: How conceptions of the future self transform intertemporal choice. *Annals of the New York Academy of Sciences*, 1235, 30-43. doi:10.1111/j.1749-6632.2011.06201.x.
- Ersner-Hershfield, H., Garton, M. T., Ballard, K., Samanez-Larkin, G. R., & Knutson, B. (2009). Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making*, 4(4), 280. Retrieved from <http://journal.sjdm.org/>
- Ersner-Hershfield, H., Wimmer, G. E., & Knutson, B. (2009). Saving for the future self: Neural measures of future self-continuity predict temporal discounting. *Social Cognitive and Affective Neuroscience*, 4(1), 85-92. doi:10.1093/scan/nsn042
- Ferretti, F., Chiera, A., Nicchiarelli, S., Adornetti, I., Magni, R., Vicari, S., ...Marini, A. (2018). The development of episodic future thinking in middle childhood. *Cognitive Processing*, 19(1), 87-94. doi:10.1007/s10339-017-0842-5
- Friedline, T. (2015). A developmental perspective on children's economic agency. *Journal of Consumer Affairs*, 49(1), 39-68. doi:10.1111/joca.12062
- Frye, D., Zelazo, P. D., & Palfai, T. (1995). Theory of mind and rule-based reasoning. *Cognitive Development*, 10(4), 483-527. doi:10.1016/0885-2014(95)90024-1
- Fujii, S. (2006). Environmental concern, attitude toward frugality, and ease of behavior as determinants of pro-environmental behavior intentions. *Journal of Environmental Psychology*, 26(4), 262-268. doi:10.1016/j.jenvp.2006.09.003
- Funder, D. C. (2019). *The personality puzzle* (8th ed.). New York, NY: WW Norton & Company.

- Furnham, A. (1999a). Economic socialization: A study of adults' perceptions and uses of allowances (pocket money) to educate children. *British Journal of Developmental Psychology*, 17(4), 585-604. doi:10.1348/026151099165492
- Furnham, A. (1999b). The saving and spending habits of young people. *Journal of Economic Psychology*, 20(6), 677-697. doi:10.1016/S0167-4870(99)00030-6
- Furnham, A., & Argyle, M. (1998). *The psychology of money*. London, England: Taylor & Frances/Routledge.
- Furnham, A., & Cheng, H. (2019). Factors influencing adult savings and investment: Findings from a nationally representative sample. *Personality and Individual Differences*, 151(1), 109510. doi:10.1016/j.paid.2019.109510
- Garon, N., & Moore, C. (2006). Negative affectivity predicts individual differences in decision making for preschoolers. *The Journal of Genetic Psychology*, 167(4), 443-462. doi:10.3200/GNTP.167.4.443-462
- Gudmunson, C. G., & Danes, S. M. (2011). Family financial socialization: Theory and critical review. *Journal of Family and Economic Issues*, 32(4), 644-667. doi:10.1007/s10834-011-9275-y
- Hanson, L. K., Atance, C. M., & Paluck, S. W. (2014). Is thinking about the future related to theory of mind and executive function? Not in preschoolers. *Journal of Experimental Child Psychology*, 128, 120-137. doi:10.1016/j.jecp.2014.07.006
- Harris, M. N., Loundes, J., & Webster, E. (2002). Determinants of household saving in Australia. *Economic Record*, 78(241), 207-223. doi:10.1111/1475-4932.00024
- Hershey, D. A., & Mowen, J. C. (2000). Psychological determinants of financial preparedness for retirement. *The Gerontologist*, 40(6), 687-697. doi:10.1093/geront/40.6.687
- Hill, E. L. (2004). Executive dysfunction in autism. *Trends in Cognitive Sciences*, 8(1), 26-32. doi:10.1016/j.tics.2003.11.003
- Hirsh, J. B., Morisano, D., & Peterson, J. B. (2008). Delay discounting: Interactions between personality and cognitive ability. *Journal of Research in Personality*, 42(6), 1646-1650. doi:10.1016/j.jrp.2008.07.005
- Hogarth, J. M. (1991). Asset management and retired households: Savers, dissavers, and alternators. *Financial Counseling and Planning*, 2(2), 97-121.
- Hongwanishkul, D., Happaney, K. R., Lee, W. S., & Zelazo, P. D. (2005). Assessment of hot and cool executive function in young children: Age-related changes and individual differences. *Developmental Neuropsychology*, 28(2), 617-644. doi:10.1207/s15326942dn2802_4

- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114–158). New York, NY: The Guilford Press.
- Joireman, J., Shaffer, M. J., Balliet, D., & Strathman, A. (2012). Promotion orientation explains why future-oriented people exercise and eat healthy: Evidence from the two-factor consideration of future consequences-14 scale. *Personality and Social Psychology Bulletin*, 38(10), 1272-1287. doi:10.1177/0146167212449362
- Kamawar, D., Connolly, K., Astle-Rahim, A., Smygwyat, S., & Vendetti, C. (2019). Preschoolers' saving behavior: The role of planning and self-control. *Child Development*, 90(4), e407-e420. doi:10.1111/cdev.13037.
- Kamber, E., & Tahiroğlu, D. (2019, September). *Preschool children's saving behavior*. Poster session presented at the 2nd Developmental Psychology Symposium, İzmir, Ege University.
- Kausel, E. E., Hansen, E., & Tapia, P. (2016). Responsible personal finance: The role of conscientiousness in bank and pension savings in Chile. *International Review of Finance*, 16(1), 161-167. doi:10.1111/irfi.12069
- Katona, G. (1949). Effect of income changes on the rate of saving. *The Review of Economics and Statistics*, 31(2), 95-103. doi:10.2307/1927856
- Katona, G. (1975). *Psychological economics*. New York, NY: Elsevier.
- Keynes, J. M. (1936). *The general theory of employment, interest and money*. London, England: Macmillan Press Ltd.
- Kidwell, B., & Turrisi, R. (2004). An examination of college student money management tendencies. *Journal of Economic Psychology*, 25(5), 601-616. doi:10.1016/S0167-4870(03)00073-4
- Kim, J., & Chatterjee, S. (2013). Childhood financial socialization and young adults' financial management. *Journal of Financial Counseling and Planning*, 24(1), 61-79.
- Lea, S. E. G., Webley, P., & Walker, C. M. (1995). Psychological factors in consumer debt: Money management, time horizons and consumer behaviour. *Journal of Economic Psychology*, 16(4), 681–701. doi:10.1016/0167-4870(95)00013-4
- Lee, W. S., & Carlson, S. M. (2015). Knowing when to be “rational”: Flexible economic decision making and executive function in preschool children. *Child Development*, 86(5), 1434-1448. doi:10.1111/cdev.12401
- Lemmon, K & Moore, C. (2007). The development of prudence in the face of varying future rewards. *Developmental Science*, 10(4), 502-511. doi:10.1111/j.1467- 7687.2007.00603.x

- Letkiewicz, J. C., & Fox, J. J. (2014). Conscientiousness, financial literacy, and asset accumulation of young adults. *Journal of Consumer Affairs*, 48(2), 274-300. doi:10.1111/joca.12040
- Lewis, A., & Scott, A. J., (2000) The economic awareness, knowledge and pocket money practices of a sample of UK adolescents. *Children's Social and Economics Education* 4(1), 34–46. doi:10.2304/csee.2000.4.1.34
- Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare?. *American Economic Review*, 98(2), 413-417. doi:10.1257/aer.98.2.413
- Martin, A., Markhvida, M., Hallegatte, S., & Walsh, B. (2020). Socio-economic impacts of COVID-19 on household consumption and poverty. *Economics of Disasters and Climate Change*, 4(3), 453-479. doi:10.1007/s41885-020-00070-3
- Martinsson, J., Lundqvist, L. J., & Sundström, A. (2011). Energy saving in Swedish households. The (relative) importance of environmental attitudes. *Energy Policy*, 39(9), 5182-5191. doi:10.1016/j.enpol.2011.05.046
- Mayfield, C., Perdue, G., & Wooten, K. (2008). Investment management and personality type. *Financial Services Review*, 17(3), 219-236.
- Mazachowsky, T. R., Atance, C. M., Mitchinson, S., & Mahy, C. E. (2020). “What should you bring with you to this place?”: Examining children’s episodic foresight using open-ended questions. *The Journal of Genetic Psychology*, 181(4), 223-236. doi:10.1080/00221325.2020.1753646
- Mazachowsky, T. R., & Mahy, C. E. V. (2020). Construction of the children's future thinking questionnaire: A reliable and valid parent-report measure of children's future-oriented cognition. *Developmental Psychology*, 56(4), 756-772. doi:10.1037/dev0000885
- McCrae, R. R., & Costa, P. T., Jr. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 159–181). New York, NY: The Guilford Press.
- Metcalf, J. L., & Atance, C. M. (2011). Do preschoolers save to benefit their future selves?. *Cognitive Development*, 26(4), 371-382. doi:10.1016/j.cogdev.2011.09.003
- Mischel, W., Shoda, Y., & Rodriguez, M. I. (1989). Delay of gratification in children. *Science*, 244(4907), 933-938. doi:10.1126/science.2658056
- Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. (2000). The unity and diversity of executive functions and their contributions to complex “frontal lobe” tasks: A latent variable analysis. *Cognitive Psychology*, 41(1), 49-100. doi:10.1006/cogp.1999.0734

- Modigliani, F., & Brumberg, R. (1954). Utility analysis and the consumption function: An interpretation of cross-section data. In K. K. Kurihara (Ed.), *Post-Keynesian economics* (pp. 388–436). New Brunswick, NJ: Rutgers University Press.
- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ...Sears, M. R. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences*, 108(7), 2693-2698. doi:10.1073/pnas.1010076108
- Mowen, J. C. (2000). *The 3M model of motivation and personality: Theory and empirical applications to consumer behavior*. Norwell, MA: Kluwer Academic Publishers.
- Mowen, J. C., & Spears, N. (1999). Understanding compulsive buying among college students: A hierarchical approach. *Journal of Consumer Psychology*, 8(4), 407-430. doi:10.1207/s15327663jcp0804_03
- Nebioğlu, M., Konuk, N., Akbaba, S., & Eroglu, Y. (2012). The investigation of validity and reliability of the Turkish version of the Brief Self-Control Scale. *Bulletin of Clinical Psychopharmacology*, 22(4), 340-351. doi:10.5455/bcp.20120911042732
- Nelson, M. C., Lust, K., Story, M., & Ehlinger, E. (2008). Credit card debt, stress and key health risk behaviors among college students. *American Journal of Health Promotion*, 22(6), 400-406. doi:10.4278/ajhp.22.6.400
- Niimi, Y., & Horioka, C. Y. (2019). The wealth decumulation behavior of the retired elderly in Japan: The relative importance of precautionary saving and bequest motives. *Journal of the Japanese and International Economies*, 51, 52-63. doi:10.1016/j.jjie.2018.10.002
- Nyhus, E. K. (2002). *Psychological determinants of household saving behaviour* (Doctoral dissertation). Retrieved from <http://hdl.handle.net/11250/164358>
- Nyhus, E.K. (2018). Saving behaviour: economic and psychological approaches. In R. Ranyard (Ed.), *Economic psychology* (pp. 206-221). Chichester, NY: John Wiley & Sons Ltd.
- Nyhus, E. K., & Webley, P. (2001). The role of personality in household saving and borrowing behaviour. *European Journal of Personality*, 15(1), 85-103. doi:10.1002/per.422
- Otto, A. (2009). *The economic psychology of adolescent saving*. (Doctoral dissertation). Retrieved from <http://hdl.handle.net/10036/83873>
- Otto, A. (2013). Saving in childhood and adolescence: Insights from developmental psychology. *Economics of Education Review*, 33, 8-18. doi:10.1016/j.econedurev.2012.09.005

- Otto, A. M., Schots, P. A., Westerman, J. A., & Webley, P. (2006). Children's use of saving strategies: An experimental approach. *Journal of Economic Psychology*, 27(1), 57-72. doi:10.1016/j.joep.2005.06.013
- Poterba, J. M., Venti, S. F., & Wise, D. A. (1996). How retirement saving programs increase saving. *Journal of Economic Perspectives*, 10(4), 91-112. doi:10.1257/jep.10.4.91
- Prior, M., Sanson, A., & Oberklaid, F. (1989). The Australian temperament project. In G. A. Kohnstamm, J. E. Bates, & M. K. Rothbart (Eds.), *Temperament in childhood* (pp. 537-556). Chichester, NY: John Wiley & Sons Inc.
- Putnam, S. P., & Rothbart, M. K. (2006). Development of short and very short forms of the Children's Behavior Questionnaire. *Journal of Personality Assessment*, 87(1), 102-112. doi:10.1207/s15327752jpa8701_09
- Rabinovich, A., & Webley, P. (2007). Filling the gap between planning and doing: Psychological factors involved in the successful implementation of saving intention. *Journal of Economic Psychology*, 28(4), 444-461. doi:10.1016/j.joep.2006.09.002
- Raghubir, P., & Srivastava, J. (2009). The denomination effect. *Journal of Consumer Research*, 36(4), 701-713. doi:10.1086/599222
- Rha, J. Y., Montalto, C. P., & Hanna, S. D. (2006). The effect of self-control mechanisms on household saving behavior. *Journal of Financial Counseling and Planning*, 17(2), 3-16.
- Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of Consumer Research*, 34(6), 767-782. doi:10.1086/523285
- Rothbart, M. K. (2007). Temperament, development, and personality. *Current Directions in Psychological Science*, 16(4), 207-212. doi:10.1111/j.1467-8721.2007.00505.x
- Rothbart, M. K., & Bates, J. E. (1998). Temperament. In W. Damon, & N. Eisenberg (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (pp. 105-176). New Jersey, NJ: John Wiley & Sons Inc.
- Shefrin, H. M., & Thaler, R. H. (1988). The behavioral life-cycle hypothesis. *Economic Inquiry*, 26(4), 609-643. doi:10.1111/j.1465-7295.1988.tb01520.x
- Shim, S., Barber, B. L., Card, N. A., Xiao, J. J., & Serido, J. (2010). Financial socialization of first-year college students: The roles of parents, work, and education. *Journal of Youth and Adolescence*, 39(12), 1457-1470. doi:10.1007/s10964-009-9432-x
- Skinner, J. (2007). Are you sure you're saving enough for retirement?. *Journal of Economic Perspectives*, 21(3), 59-80. doi:10.3386/w12981

- Smith, C. E., Echelbarger, M., Gelman, S. A., & Rick, S. I. (2018). Spendthrifts and tightwads in childhood: Feelings about spending predict children's financial decision making. *Journal of Behavioral Decision Making*, 31(3), 446-460. doi:10.1002/bdm.2071
- Suddendorf, T., & Corballis, M. C. (2007). The evolution of foresight: What is mental time travel, and is it unique to humans?. *Behavioral and Brain Sciences*, 30(3), 299-313. doi:10.1017/S0140525X07001975
- Sümer, N. & Sümer, H. C. (2003) *Beş faktör kişilik özellikleri ölçeği* [Big Five Personality Inventory]. Unpublished manuscript.
- Sonuga-Barke, E. J. S., & Webley, P. (1993). *Essays in developmental psychology. Children's saving: A study in the development of economic behaviour*. Hove, England: Lawrence Erlbaum Associates, Inc.
- Strathman, A., Gleicher, F., Boninger, D. S., & Edwards, C. S. (1994). The consideration of future consequences: weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*, 66(4), 742. doi:10.1037/0022-3514.66.4.742
- Strömbäck, C., Lind, T., Skagerlund, K., Västfjäll, D., & Tinghög, G. (2017). Does self-control predict financial behavior and financial well-being?. *Journal of Behavioral and Experimental Finance*, 14, 30-38. doi:10.1016/j.jbef.2017.04.002
- Tangney, J. P., Baumeister, R. F., and Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*. 72(2), 271–324. doi:10.1111/j.0022-3506.2004.00263.x
- Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self-control. *Journal of Political Economy*, 89(2), 392-406. doi:10.1086/260971
- Troisi, J. D., Christopher, A. N., & Marek, P. (2006). Materialism and money spending disposition as predictors of economic and personality variables. *North American Journal of Psychology*, 8(3). 421-436.
- Ünal, G., & Hohenberger, A. (2017). The cognitive bases of the development of past and future episodic cognition in preschoolers. *Journal of Experimental Child Psychology*, 162, 242-258. doi:10.1016/j.jecp.2017.05.014
- Wärneryd, K. E. (1995). *The study of saving behaviour towards the end of the life cycle* (Working Paper No. 28). Tilburg: CentER for Economic Research
- Wärneryd, K. E. (1999). *The psychology of saving: A study on economic psychology*. Cheltenham, England: Edward Elgar Publishing.
- Webley, P., & Nyhus, E. K. (2001). Life-cycle and dispositional routes into problem debt. *British Journal of Psychology*, 92(3), 423-446. doi:10.1348/000712601162275

- Webley, P., & Nyhus, E. K. (2006). Parents' influence on children's future orientation and saving. *Journal of Economic Psychology*, 27(1), 140-164. doi:10.1016/j.joep.2005.06.016
- Webley, P., & Nyhus, E. K. (2013). Economic socialization, saving and assets in European young adults. *Economics of Education Review*, 33, 19-30. doi:10.1016/j.econedurev.2012.09.001
- Yagmurlu, B., & Sanson, A. (2009). The role of child temperament, parenting and culture in the development of prosocial behaviors. *Australian Journal of Psychology*, 61, 77-88.
- Zelazo, P. D. (2006). The Dimensional Change Card Sort (DCCS): A method of assessing executive function in children. *Nature Protocols*, 1(1), 297-301. doi:10.1038/nprot.2006.46
- Zelazo, P. D., Anderson, J. E., Richler, J., Wallner-Allen, K., Beaumont, J. L., Conway, K. P., ...Weintraub, S. (2014). NIH Toolbox Cognition Battery (CB): validation of executive function measures in adults. *Journal of the International Neuropsychological Society*, 20(6), 620-629. doi:10.1017/S1355617714000472
- Zelazo, P. D., & Carlson, S. M. (2012). Hot and cool executive function in childhood and adolescence: Development and plasticity. *Child Development Perspectives*, 6(4), 354-360. doi:10.1111/j.1750-8606.2012.00246.x